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ORIGINAL ARTICLES.

THE IMMEDIATE AND REMOTE RESULTS IN ONE HUNDRED CONSERVATIVE OPERATIONS ON THE OVARIES AND TUBES; WITH BRIEF REPORTS OF FOUR CASES.¹

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YOUR chairman has been kind enough to invite me to give you the results of my experience in operating on the uterine appendages with a view to the preservation of their function. As I told him at the time he extended the invitation, I am always glad of an excuse for coming to New York. We in Boston regard the metropolis as a Mecca to which we must periodically journey in search not only of entertainment and amusement, but of all that is new and progressive in medicine, and I hope to profit largely by the discussion of the subject of this evening.

Last May I read a statistical paper on the "Remote Results of Conservative Operations on the Ovaries and Tubes" before the American Gynecological Society. This paper embodied a tabulated report of 85 cases which had been under observation a year or more since their operations, as it seemed to me that at least a year after operation was necessary in order to arrive at just conclusions as to end results.

Classing as conservative operations all those in which, an operation on the appendages being performed, not including cases of hysterectomy or suspension of the ovaries, one ovary, a portion of one ovary, or one tube or a portion of one tube was left behind, my cases up to March 1, 1900, numbered 137. Between March 1st and February 1st, I have had 19 additional cases to add to my list making a total of 156. Of these, 100 have now been under observation for at least a year after their operations.

It is my purpose to-night to present a résumé of the immediate and remote results in these one hundred cases and also to report a few illustrative cases.

The different points in the technic I shall omit from my paper, also the indications for performing conservative operations.

The Immediate Results.—Three patients out of 156 have died as a result of operation; one, a case of colpotosy in which there was a sec-

ondary hemorrhage, my only case of the kind; the second, a case of neglected and septic ectopic pregnancy, in which I made an error of judgment in resecting the remaining ovary and tube, and the third, a case of multiple operations for adherent retroversion with salpingitis and appendicitis, and ulceration of the bladder on a patient who, unknown to me, was very much debilitated at the time of operation. In these cases, in order to treat the ulcerated bladder, I exceeded my customary rule of finishing all operations within two hours. The patient died of shock in thirty-six hours.

Among my early operations, certain of the patients had marked enlargement of a resected ovary in the weeks immediately following operation, the enlargement disappearing in the course of time. Some of the patients had a good deal of pain. Latterly these phenomena have been noted less frequently, and I am inclined to think that the enlargement and pain were due to free puncturing of cysts without especially careful measures to produce hemostasis, and that the enlargement and pain were caused by hemorrhage as well as by trauma.

Pelvic inflammatory exudate about ovary and tube has been noted in a few cases following resection of a closed tube, these being in the old gonorrheal cases as far as could be determined, at all events in those patients who had had repeated attacks of pelvic inflammation previous to operation.

In other respects the convalescence from operation has been as uneventful as in other similar operations where ovaries and tubes had not been resected.

We must recognize the fact that as a general rule conservative operations require a somewhat longer time for their performance than the radical operations, and it is important to bear this in mind when operating on enfeebled patients. My rule in performing all multiple operations is to do nothing more than can be well done in two hours at the outside from the first incision to the tying of the last suture, the patient being carefully prepared and in good condition before the operation. A large majority of this class of operations, which includes the conservative operations, are finished and the patient in bed inside of an hour and a half. The total length of time a patient is under ether is in my opinion of more importance than the time taken in removing any given tumor.

The Remote Results.—The greatest interest centers in the late results of the preservation of ovarian and tubal tissue. We are all en-

¹ Read before the New York Academy of Medicine, February 7, 1901.

gaged in the determination of the value of leaving an ovary or part of an ovary when it is necessary to do hysterectomy, as in the case of fibroids. In the few instances in which I have followed this plan the symptoms of the artificially induced menopause have seemed to be lessened. We must entertain the possibility of pregnancy occurring in the Fallopian tube or in the abdominal cavity where the uterus has been removed and ovary and tube are left. An instance of this has already been reported in literature.

To summarize the statistics presented in my paper of last May and also the statistics of fifteen additional cases which have been collected since then, it appears that symptomatic cure was recorded in 73 out of 100 cases and 27 were not relieved. From the fact that a large number of the patients were pronounced neurasthenics, and from the inherent difficulty in determining in this class of cases the relative causative effect of disease of the uterine organs and disease of the nervous system on the symptoms presented in a given case, we are not to attach too much weight to these figures. The data are all from my private notes taken with the purpose of reporting the results, and a large majority of the patients have been under my personal observation.

Anatomical cure (ovaries and tubes normal to feel and well placed) was noted in 44 out of 69 cases who came under observation, or 64 per cent. Some enlargement or prolapse of ovaries and tubes was found in the remaining 25 cases. Pregnancy following operation occurred in 19 cases. In no instance, however, did pregnancy result after the resection of a closed tube, both tubes being closed at the time of operation.

To estimate the probability of pregnancy occurring after conservative operations on the ovaries and tubes we must deduct from the list of married women those who have been through subsequent oophorectomies or hysterectomies, those who have become widows or have taken measures to prevent conception, and we must add those who have been married since operation. According to my list, which must of necessity be more or less inaccurate, 32.7 per cent. became pregnant. Furthermore, it is a noteworthy fact that all of the cases of subsequent pregnancy except three had had one or more pregnancies previous to operation, so that we may say that 34½ per cent. of those who had previously borne children became pregnant after operation, whereas only 6⅓ per cent. of those previously sterile subsequently became pregnant.

Several of the unsuccessful cases have been women over thirty-five years old with extensive, long-standing tubal and ovarian disease; and it would seem that it is less desirable to subject such cases to conservative operations than the younger women with the same trouble, for at this time of life the patient is

suffering not so much from the ovarian and tubal affection as she is from the long-continued effects of it. There is little chance that the uterine organs, diseased for many years, will be able to regain an approximately normal condition in the remaining years of functional activity, both because of the limited time and because the reparative powers of the system are less vigorous than at an earlier age. Therefore these patients either need no operation at all or they need an operation which will eliminate entirely the ovarian function, thus doing away with monthly pain and discomfort, an additional burden to an already jaded nervous system.

As bearing on the question of resected ovaries becoming diseased at some future time the following quotation from the paper already referred to embodies my views:

Out of all the 85 cases, in only one case, a syphilitic, was another operation necessary because of such subsequent enlargement of an ovary resected for cystic disease. In 3 instances in which one ovary was removed and cysts were punctured in the remaining ovary because it was cystic, another operation was required. In 7 other cases a remaining ovary, cystic at the time of operation, was later noted as being large, although causing no ovarian symptoms.

In 5 cases of the extensive purulent inflammatory type, all of them gonorrheal and 3 of them syphilitic, one ovary and tube being removed in each case, the remaining ovary became diseased following operation, and another operation was indicated, although as yet only one of these patients has actually submitted to operation.

In 2 of my early cases, both gonorrheal, a diseased ovary was left in the bottom of the pelvis, in one case after the removal of the sac of an ectopic pregnancy, and in the other after the removal of a pus tube. Both of these women have been sufferers since their operations, six and seven years ago respectively, but have not been willing to undergo another operation.

As far as I have been able to determine, the amount of ovarian tissue present has no definite relation to the amount of menstrual flow or to the intensity of sexual desire and gratification.

The most unfavorable cases for conservative operations are, in my judgment, the pronounced neurasthenics who are approaching the menopause, also patients with long-standing gonorrheal infection, and those having both ovaries thoroughly riddled with cysts.

Illustrative Cases.—When it is not advisable to remove the uterus, in chronic inflammatory diseases of the appendages, especially in young women, it is best to leave some ovarian tissue, even in the presence of early tuberculosis. The following case is an instance in point:

Case I.—M. C. N., twenty-five years old, a patient of Dr. R. A. H. MacKeen of Glace Bay, Cape Breton, was referred to me April 10, 1899. The patient had been married eight years and had been sterile. Chief complaints, poor general health, indigestion, loss of weight, dysmenorrhea of increasing severity, the catamenia always irregular and coming every two or three weeks up to the time of her marriage and since then every three or four months, flow of three or four days. On the months she skipped her periods she had severe pains in the back and groins. No cough; no history of phthisis. Physical examination showed a well-developed, well-nourished woman of dark complexion, weighing about 130 pounds. The uterus was slightly enlarged and in the axis of the vagina, both ovaries and tubes being large and adherent. Abdomen soft; not especially sensitive. Heart and lungs negative.

Operations May 11, 1899. Curetting, removal of right ovary and tube, resection of left ovary and tube, suspensio uteri. By curetting a large amount of soft tissue was obtained. On opening the peritoneal cavity it was seen that the parietal peritoneum and portions of the peritoneum on loops of intestine were studded with translucent glistening bodies the size of millet seeds that felt rough to the touch. An ounce or two of free fluid in the peritoneal cavity. Both ovaries and tubes large and the ostia of the tubes closed and ovary and tube adherent to each other. Omentum large and firmly adherent to the peritoneum over the bladder and about the pelvic brim. Appendix vermiformis normal.

The adhesions were separated and bleeding points in the omentum tied and the entire right ovary and tube removed, including a small hard nodule in the structure of the tube imbedded in the uterine tissues at the cornu, a special dissection being necessary to get it out. Oozing was controlled by a continuous suture of catgut from the ovarian vessels to the uterus. The proximal three centimeters of the left tube appeared to be normal and accordingly it was not removed, no attempt being made to form a new ostium, a difficult procedure in this portion of the tube. Three-quarters of the left ovary was removed by a V-shaped incision along the outer border. A separate tie was placed on the ovarian artery and the edge of the broad ligament and the cut surface of the ovary were sewn together with a continuous lockstitch of catgut. The uterus was suspended by three sutures of chromicised catgut passed transversely through the posterior face of the fundus, the parietal peritoneum and transversalis fascia. Irrigation of the peritoneal cavity with normal salt solution, some being left in, and closure of the abdomen without drainage completed the operation.

The patient made a good convalescence and

when she went home, June 14th, the uterus was well suspended and the left ovary a little larger than when it was resected.

The pathologist at the Harvard Medical School, to whom the specimens removed were submitted for examination, reported as follows: "Ovaries large, containing small cysts. Tubes convoluted, matted, enlarged to the size of the little finger, on section showing yellowish fluid. Microscopic examination of the tubes shows great proliferation of the connective tissue and mucosa and characteristic tubercle. Ovaries showed distended blood-vessels, numerous corpora and simple retention cysts. The diagnosis is tuberculosis of the tubes and chronic oophoritis."

A month ago Mrs. N. wrote me that she was enjoying the best of health. Her weight was 168 pounds, she felt well and strong, had no cough and her catamenia were regular and painless every month. I have recently had a similar statement from Dr. MacKeen as to her condition.

When the tubes are found to be open at the time of operation subsequent pregnancy is common even if only a small portion of ovary is left. The following case, which was left with one tube and a third of one ovary will serve as an example:

Case II.—D. W., twenty-five years old, married, entered my service at St. Elizabeth's Hospital October 27, 1899. She had had one child three years before and one abortion at three months, two months before. The monthly periods had been irregular since the abortion, coming every two or three weeks, lasting three to four days, and using twenty-four napkins. Chief complaints, weakness, pain in the sacral region and left groin and a bearing down sensation in the rectum. She also had incontinence of urine when the bladder was full. The uterus was retroverted in the axis of the vagina and enlarged so that the cavity measured 8 cm.; there was bilateral laceration of the cervix with eversion of the lips; the pelvic floor and perineum were lacerated to a medium extent, and both ovaries were enlarged, the left being the size of a hen's egg.

The operations consisted of curetting, trachelorrhaphy, perineorrhaphy, removal of left ovary and tube, resection of right ovary, and suspensio uteri.

On opening the abdomen both tubes were found to be normal. The left tube was so closely adherent to the left ovary, which was converted into a thin-walled cyst 5 cm. in diameter, that it was removed with its ovary. The right ovary was enlarged to twice the normal size and was full of small cysts. The outer two-thirds were removed and the edges of the rent in the remaining third brought together with a continuous lockstitch of No. 1 catgut.

The patient made a good recovery and went home in three weeks, the ovary not being dis-

tinguishable by bimanual palpation at the time of her discharge from the hospital.

She menstruated only once after getting home as she became pregnant. Her pregnancy was perfectly normal and was followed by a normal labor, and December 1, 1900, she brought her large, healthy baby to my office. At that time her uterus was in good position, well involuted and the right ovary could not be felt.

Normal pregnancy and labor following resection of the ovaries in a woman six years married and sterile, having retroversion with dense adhesions, the tubes, however, being normal, are shown in the next case.

Case III.—M. C., twenty-five years of age, was sent to me September 29, 1899, by Dr. J. P. Treanor of Dorchester, Mass. The patient was a well-developed and well-nourished woman presenting a history of phthisis and cancer on her mother's side. She had had a long persisting middle-ear catarrh two years before and had had poor general health since marriage six years before. No history of gonorrhea. Had had a vaginal discharge since eighteen years of age, yellow and irritating, and at times enough in quantity to require the use of a napkin. Further symptoms were pain in the back, irregular and profuse catamenia, poor sleep and poor digestion.

The uterus was in the third degree of retroversion and fixed and slightly enlarged. The ovaries could not well be made out. The crown of the cervix was extensively eroded, more especially front and back.

Operations December 11, 1899. Curetting, trachelorrhaphy, resection of both ovaries, and suspensio uteri. Trachelorrhaphy was performed in order to do away with the erosion. On opening the abdomen the cul-de-sac of Douglas was found to be entirely obliterated by adhesive inflammation and the ovaries and tubes were riding on top of the exudate, the right ovary being enlarged to twice the normal size and cystic, and the left ovary moderately cystic. Both tubes soft and swollen, but with ostia open. The right ovary was freed from adhesions and a third of it cut away, two cysts being enucleated from the remaining portion. Two cysts in the left ovary were punctured. The cul-de-sac was freed by a somewhat difficult dissection and the uterus suspended.

The convalescence was uneventful and the patient was sent home in three weeks. March 27, 1900, I examined her and the uterus was in place and was pregnant. Dr. Treanor telephoned me two weeks ago that Mrs. C. had had a normal pregnancy and gave birth to a healthy boy at term, the labor being entirely normal.

I will close this paper with the report of a fourth case, which, though strictly speaking not a conservative operation, the ovary being left behind in the pelvis because it could not be found, is quite unique in my experience.

Case IV.—A. H., thirty years old and married 13 years, was referred to me by Dr. E. M. Buckingham of Boston May 19, 1899. She gave the following history: Had had four children, the youngest being a year and a half, and three miscarriages. The first labor was terminated by embryotomy, the others were normal. There had been a curetting after one of the miscarriages, nothing of note as to the others. Catamenia very irregular and the flow scanty. Has been flowing a little for the last six weeks and has had constant pain in the abdomen extending down the thighs, and pain in the rectum since the flow began. Gas in the bowels increases the pain, also defecation. Loss of flesh. Patient is nervous and irritable in temper.

Physical examination showed a tall, well-developed and well-nourished woman of dark complexion. Skin of abdomen soft and wrinkled, vulva gaping, urethra dislocated downward, uterus in good position in the pelvis, somewhat enlarged, with bilateral tear of the cervix of moderate degree. A mass behind the uterus the size of a Florida orange, of irregular outline and excessively sensitive to the touch. Probable diagnosis, ectopic pregnancy with lacerated cervix and perineum and dislocation of the urethra downward.

Operations, May 25, 1899. No tissue was obtained by curetting. The cervix and perineum were repaired by rather extensive operations. On going through the thin abdominal walls dark blood was found in the peritoneal cavity; the omentum was large and thin. The mass in the cul-de-sac was made up of blood-clots and both ovaries and tubes matted together. The clots and as much of the sac of plastic lymph enclosing them as possible were removed. The left tube measured 4.5 cm. in length and 3 cm. in diameter. In its outer third was a mole of firm consistency, the walls of the tube being much distended but intact, the hemorrhage having come through the ostium abdominale of the tube. The inner third of the tube showed two little hard nodules the size of pea beans in the substance of the tube and occluding its lumen. The right ovary was converted into a cyst the size of a hen's egg and there was no good ovarian tissue which could be preserved. The right tube was enlarged, thickened, convoluted, adherent to the cyst wall, and its inner third was studded with hard nodules similar to those in the left tube. The left ovary could not be found but was thought to be incorporated in the sac of the pelvic hematocele, all of which could not be removed owing to lack of time. Both tubes and the right ovary were removed completely by cutting them away and sewing the edges of the broad ligaments over and over with chromicised catgut, making extra ties for the ovarian arteries. A small piece was taken out of the uterine tissue at each cornu of the uterus so that no tubal tissue was left behind.

The uterus was suspended to keep the fundus out of the raw surface in the cul-de-sac and to counteract the dislocation of the urethra. Salt solution was left in the peritoneal cavity and the abdomen closed without drainage.

The convalescence was interrupted by an attack of cystitis of mild grade lasting two weeks. In a month, when the patient went home there was good union in the cervix and perineum and abdominal wound, the uterus was well suspended and the cul-de-sac free.

The pathologist examined the specimens removed and reported that there were no evidences of ectopic pregnancy.

Now come the unusual features of the case. Six months after the operation a physician in a neighboring town, who was taking care of Mrs. H. at the time, telephoned me that she was two months' pregnant to the best of his judgment, and two months later the patient's husband said she had had a miscarriage. December 29, 1900, in response to my request, she came to my office and I then learned that she had had a miscarriage without doubt: she saw the fetus, which was well-formed and of the male sex, and the miscarriage had been at four months as nearly as she could calculate. Furthermore, at the time of her visit to my office, a year and a half after her operations, she had gone over her time three months, having been previously regular every month since the operation, with the exception just noted, and by examination she proved to be three months' pregnant, not a sign or symptom being lacking to the diagnosis.

We have in this case an example of pregnancy occurring twice following complete removal of both tubes and one ovary for tubal mole, chronic salpingitis and cyst of the ovary. As an explanation we have to assume that an opening became established at the uterine cornu on one side or the other, between my catgut stitches, so that the uterine cavity was connected with the peritoneal cavity where the missing ovary was located, and without the intervention of the tubes.

The case becomes especially instructive when considered in connection with the reported cases in which stumps of tubes, which had been tied off by means of mass ligatures at previous operation months or years before, were found to have patent canals leading into the uterus; and also with those cases found in literature, of pregnancy following removal of both ovaries and tubes, assuming in the latter cases that a portion of ovary had been included in the ligature which was tied about the ovary and tube, or, less likely, the existence of a third ovary.

In my case every bit of tubal tissue was carefully removed and in spite of this fact ova from the lost ovary succeeded in getting into the uterus and becoming fertilized, illustrating the persistency with which Nature in the face of difficulties maintains a path for the passage

of the ovum, and in marked contrast to our cases of resection of closed tubes in which, pregnancy not supervening, we must assume that the tubes subsequently became closed.

TROPACOCAINE HYDROCHLORATE—A SUBSTITUTE FOR COCAINE HYDROCHLORATE IN SPINAL ANESTHESIA.

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In a recent communication (*Centralblatt für Chirurgie*, March 2, 1901), Dr. Karl Schwarz, Hospital Surgeon in Agram, publishes his experience with tropacocaine in spinal anesthesia. With the view to avoiding the annoying immediate and after-effects resulting from the use of the ordinary cocaine in this kind of anesthesia, Schwartz first experimented with eucaïne B, but soon discarded it, since the same disagreeable symptoms connected with the use of cocaine were observed and the analgesic effect was much weaker.

He then tried to utilize the experience of R. Pitesci, who had found that a second subarachnoid cocaine injection on the same patient is not attended by any of the unpleasant effects generally seen at the first injection. Schwarz, therefore, proceeded to immunize the patients, so to speak, against the effect of the cocaine, by giving them a hypodermic of $\frac{1}{2}$ grain of cocaine the day preceding the operation. However, the result was not satisfactory. As a third trial he employed tropacocaine. After a number of carefully conducted experiments he found that 5 centigrams ($\frac{1}{2}$ grain) of this drug, injected into the subarachnoid space, produced as perfect an analgesia as the ordinary cocaine, and none of the usual symptoms, such as pallor, perspiration, nausea, vomiting, headache, dizziness or rise of temperature were observed in any of the sixteen patients thus rendered partially analgesic by him. Ten minutes after the injection analgesia was generally complete and absolute until the end of the operation, the latter having lasted as long as two hours in one instance.

Two days after the respective number of the *Centralblatt* had come into my hands, it so happened that I had to perform nephrectomy for tuberculous disease in a patient, thirty-seven years of age, who had been afflicted with urinary symptoms for more than three years. He was much emaciated, expectorated a scanty amount of sputum containing tubercle bacilli, had hectic fever and such continuous pain in his left side that he was unable to walk straight, and was deprived, more or less, of sound sleep. Within the last six months the pain had extended to the right side. Urinary analysis showed that in 2,040 c.c. of urine voided in twenty-four hours, he discharged only 13.6 grams of urea, thus proving beyond a

doubt that both kidneys were affected. Under ordinary conditions I should certainly have refrained from operating on a patient like this, and rather have sent him South, placing him under general hygienic régime, etc. As it was, the incessant pain was becoming unbearable to the patient, and operation on the left kidney was clearly indicated. Naturally, I did not like to employ general anesthesia in a case like this, and so resolved to try tropacocaine. Knowing from correspondence with Dr. Dudley Tait, of San Francisco, who, as is well known, has made many interesting experiments with spinal anesthesia, that a larger quantity of liquid injected into the subarachnoid space would spread analgesia further upward, I dissolved 5 centigrams of tropacocaine in 50 minims of sterilized water immediately before operation, and injected the same between the fourth and fifth lumbar vertebrae, with the patient in the scorch position. Twelve minutes later, the field of operation having been cleansed and the patient placed in the proper position, operation was begun. In addition a suggestive general anesthesia with one part of alcohol and two parts of water on Esmarch's mask was employed, a deception which I generally practise in cases of spinal anesthesia and which I can highly recommend, especially when dealing with neurotic patients. Simon's longitudinal incision was employed, the twelfth rib resected with Gigli's saw and the kidney brought in front of the wound. At this stage of the operation only did the patient complain of any pain; evidently the analgesia did not reach the upper pole of the kidney, so that the manipulations of loosening it from below the diaphragm, as well as traction on this part of the organ, were felt by the patient. The ureter was then tied and, after proper isolation, the vessels were ligatured *en masse*. An anomalous plexus of vessels entered the lower pole of the kidney.

The operation was an almost bloodless one, the patient certainly having lost not more than a tablespoonful of blood. In view of the fact that the urine was loaded with tubercle bacilli and that some urine had entered the wound when dividing the ureter and, later, cauterizing and ligating its stump, the deep wound was drained in part and the upper angles were closed with catgut stitches. The operation lasted about forty-five minutes.

During all this time the patient had not complained of pain, except on traction of the upper pole of the kidney. There had not been any nausea, vomiting, perspiration nor pallor. The pulse, which had been 100 before operation, had gone up to 130 and 140 at times, but was full and regular throughout the operation; a hypodermic of 1-50 of nitroglycerin had a markedly beneficial effect upon its character. Half an hour after the injection, analgesia was still perfect up to a line corresponding to the junction of lower and middle third of the space between the umbilicus and zygoid process. After completion of the operation, the patient smiled at the narcotizer, telling him that he (the patient) had fooled him in mak-

ing believe that he was sleeping, when in reality he had been wide awake the entire time—certainly a significant joke, when *we* had tried to fool him. Following the operation none of the usual complications seen after the use of cocaine hydrochlorate were observed. There was not any rise of temperature, vomiting, headache nor other neuralgia. The patient felt perfectly well.

The removed kidney showed a beginning tuberculous abscess in the upper pole of the pelvis and numerous tuberculous infiltrations of the parenchyma up to the cortex. Very little urine, loaded with pus, was passed during the first twenty-four hours following the operation, still less during the next day. On the close of the second day urinary discharge ceased altogether. Evidently the ureter had become clogged, and an operation upon the other kidney was therefore decided upon. This was again done under spinal anesthesia seventy-two hours after the first. This time the patient was rather nervous, and begged to be rendered unconscious. However, after explaining to him the risks involved in general anesthesia, he agreed that I should proceed in the same manner as before. Again 5 centigrams—this time dissolved in but 40 minims of sterilized water—were injected. On beginning to operate, ten minutes later, the patient complained of pain. Ten minutes later, anesthesia yet seemed to be somewhat imperfect; handling of the kidney, especially traction on the same, was again painful. Resection of the twelfth rib, which again was necessary, however, passed unnoticed. The right kidney was very large, and, to my dismay, in a state of cystic degeneration and filled with pus. The cysts were evacuated. The kidney was then replaced and the wound drained. During the entire operation the pulse did not vary in frequency, was of good quality and did not require any stimulation; and again, none of the so often seen symptoms following injections of the ordinary cocaine were observed, neither during nor after the operation.

Certainly, this second anesthesia was not as ideal as the first. The cause may be due to altered circumstances; the general condition and nervous apprehension of the patient and the fact that the salt had been dissolved in ten minims less than at the first anesthesia.

Two days after this operation I had a third experience with tropacocaine which, exciting as it was, proved beyond a doubt the superiority of tropacocaine over cocaine, as regards avoiding the subsequent clinical complicating features.

Mr. J. S. had had nephrotomy performed eight years ago for right renal suppuration. About two ounces of pus had been removed from the pelvis and the latter drained. No stone was found. During convalescence the left kidney became seriously affected; marked renal hematuria and pyuria. Patient improved under symptomatic treatment. Repeated attacks of pain in the left lumbar region pointed to a continuation of the disease on the left side. Catheterization of the ureters done by me in 1897 pointed to a sup-

purative process in the left kidney, for which nephrotomy was proposed. The patient refused operation and did not consult me again until the beginning of March, 1901, by which time the frequent pains in the left kidney had become unbearable.

Cystoscopy showed that the mouth of the left ureter was blocked by a calculus which also could be felt later with the stone-searcher. Urinary analysis which had been made two days previous, therefore referred to the excretion of the right kidney only, and proved beyond a doubt that the same was still diseased. Under stimulating treatment the obstruction in the left ureter was removed; an immense amount of coagulated fibrin, pus and small irregular pieces of calculus were passed. After this the patient rapidly recuperated, but the pain in the left side persisted, though less severe. Analysis of the material passed after the blockade of the left ureter had been raised made it probable that a phosphatic shell had been loosened by the suppurative process from a more compact nucleus. An X-ray picture was taken, but failed to show anything definite. Exploratory nephrotomy was proposed, accepted and done under spinal anesthesia with tropacocaine on March 23d. Puncture between fourth and fifth lumbar vertebrae, with patient in scorching position. The needle had to be introduced deep. While injecting the first two-thirds of the solution (5 centigrams dissolved in 50 minims of distilled water), it was noticed that the syringe worked rather hard. After pushing the needle forward for about two millimeters, the remainder was emptied with the usual ease. Conclusion: tip of needle must have been accidentally withdrawn for a minimal distance, but sufficiently to cause the first portion of the syringe to be injected probably outside of the dural sac. Fifteen minutes later, anesthesia had not yet begun; second injection was therefore made at same spot. Needle struck subarachnoid space about one inch nearer than before. This time 4 centigrams were injected and certainly all emptied into the subarachnoid space. Complete anesthesia was established two minutes later.

Fifteen minutes after completion of second injection, there was sudden acceleration of pulse, which soon became very thready and disappeared entirely at radials. Profuse perspiration; patient in complete collapse; nausea, vomiting. By placing him in pronounced Trendelenburg posture and employing strong hypodermic stimulation with nitroglycerine, hyoscine hydrobromate, etc., the heart's action soon improved and allowed us to finish the operation. Complete anesthesia lasted for one hour and fifteen minutes; then began to wear off. Manipulation of the kidney was again rather painful.

Of the first injection, 0.016 of a gram, approximately, had entered the subarachnoid space, 0.034 the tissues outside of the dura mater sac. At all events, the patient had gotten 0.09 of a gram (1½ grain) of tropacocaine into his system, a dose almost twice as large as that usually required.

I fully admit that the amount injected was too large. On the other hand, it is a most difficult question for the surgeon to decide how large the dose should be for a second injection if such be required. In another similar emergency, I should certainly administer a hypodermic of 1-50 to 1-25 of nitroglycerine *before* giving the second spinal injection, and place the patient in Trendelenburg's posture as soon as the needle has been withdrawn. I believe that by so doing annoying experiences like the one just related may be averted.

It certainly would be distressing to be forced to make a third injection if the second should prove to have been insufficient, and the surgeon in his endeavor to guard against such result is apt to inject more than is absolutely necessary. Of course, this latter point can never be definitely determined beforehand. But, be this as it may, the case proves beyond a doubt to my mind the absolute superiority of tropacocaine over cocaine in spinal anesthesia. The patient did not suffer any of the numerous symptoms incidental to the use of cocaine in spinal anesthesia. He developed no temperature, felt perfectly well during the latter part of the afternoon and night following the operation. At the beginning of the third twenty-four hours after the operation the temperature once touched 102° F., with a pulse of 72. This rise may have been due to the wound. After the gauze tampons, partially filling the wound only, had been removed the temperature promptly dropped to normal.

On March 28, 1900, I removed a multiple papilloma of the bladder in a man aged forty-nine years, under spinal anesthesia with tropacocaine. A few drops of the 50 minims of distilled water in which the five centigrams of the salt had been dissolved, were lost. Patient got between 0.04-0.045 tropacocaine into his subarachnoid space. During the first forty-five minutes of the operation, which was begun ten minutes after completion of the injection, analgesia was perfect. Then the patient began to complain. He felt the working of the Paquelin cautery during the shelling out of the pedicle of the second tumor. The operation was finished under general anesthesia.

It seems that fully 5 centigrams (½ of a grain) are required to produce satisfactory analgesia for an operation lasting one hour and longer. Perhaps 0.06 (1 grain) of the salt may be injected with impunity previous to more serious operations, if a subcutaneous injection of 1-50 of nitroglycerine is given at the same time. More study is required. It will most probably be shown that certain individuals have an idiosyncrasy also with regard to tropacocaine. My second case, just reported, certainly points that way.

Tropacocaine was discovered by Giesel in 1891 in Javanese coca leaves, and more closely studied by Liebermann, who succeeded in producing it synthetically. Later Willstätter discovered a way of preparing tropacocaine from tropine a fractionation product of atropine and hyoscyamine.

His method is the one now exclusively employed in the manufacture of the alkaloid. Since then the salt has been studied by many investigators, and the following points of importance in comparison to cocaine were found:

1. Tropacocaine is less than half as toxic as cocaine.
2. The depressing action, both on the cardiac motor ganglia and on the cardiac muscle, particularly the latter, is much greater with cocaine.
3. Recovery from its effects is much more rapid.
4. The solution is by far more stable than that of cocaine hydrochlorate.¹

It would therefore seem that the surgeon is allowed to have prepared and preserve a solution for spinal anesthesia. It also seems that we may be allowed to sterilize it by boiling. However, this latter point will have to be determined by actual experience.

I shall hereafter have the solution made as follows:

Tropacocaine hydrochlorate	gm. 0.015 ($\frac{1}{4}$ gr.)
Sodium chloride.....	0.06 (1 gr.)
Distilled water.....	10.0 (3iiss.)

Each ten minims of this solution contain one centigram ($\frac{1}{2}$ grain of the salt) fifty minims, therefore, contain 0.05, the generally required dose.

In view of the importance and great interest that is attached to the subject of spinal anesthesia at the present time, I thought I would publish my experience thus far, even if only to add a few more instances, demonstrating the usefulness and superiority of tropacocaine in spinal anesthesia, to the sixteen cases which have been reported by Schwarz.

I have thus far employed spinal anesthesia in the surgery of the urinary system only such as Bottini's operation, litholapaxy, vesical tumor, primary and recurrent, and must confess that in every instance I have been delighted with its immediate local analgesic effect. And, while, of course, the unpleasant symptoms accompanying the use of cocaine in spinal anesthesia are deplorable, it must be remembered that general anesthesia also quite frequently is attended by the same annoying symptoms, except, perhaps the fever. I have been satisfied so thoroughly with my results that I fully made up my mind to continue spinal anesthesia in urinary surgery. Now, however, since the drawbacks hitherto connected with this mode of producing widespread analgesia seem to have been removed, I shall be all the more ready to make use of this kind of anesthesia whenever the indication is present, and, I am sure, others will feel the same way in regard to this question.

Of course, further investigation and careful observation are needed to settle definitely many important and interesting points which are still *sub judice*.

A STUDY OF CASES PRESENTING SYMPTOMS OF ASTHENOPSIA AND ANOMALIES OF THE OCULAR MUSCLES IN WHICH ABLATION OF THE MIDDLE TURBINAL WAS EFFECTIVE TREATMENT.

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THE late Dr. Henry D. Noyes has said¹ of the class of cases to which the following histories belong, "The judicious and skilful treatment of cases of muscular asthenopia with all the complications which may co-exist is the highest problem in ophthalmology." He has also stated,² "asthenopia as a reflex effect from the nasal mucous membrane. . . . was noted by Dr. Schweigger. I have long recognized an intimate relation between nasal catarrh and chronic conjunctivitis, and that with it asthenopic symptoms are frequent." These words of that careful, scientific investigator of all knowledge in the field of ophthalmology, have been ever present to the writer when studying his cases and he seeks here only to add his quota of observations to the total sum of them that shall ultimately clarify these problems. In doing so he asks acceptance of his facts alone and not of his theories or inductions except so far as they spring logically and necessarily from the facts. The aim to find important truth, and not the interest inherent in the histories, is the sole reason for their presentation.

Case I.—Miss M. K., seamstress, twenty-seven years old, robust, muscular and in good general health, complained to me on December 2, 1899, that for years her eyes had been "weak." For more than two years her vision had been much poorer than before, blurring in her work on white goods. She had constant daily headaches and was becoming irritable. Occasionally her headaches were severe causing a dull, heavy, pressing ache, chiefly in the left temple, extending to both the vertex and occiput. They were accompanied by throbbing at the left side of the nose and inner canthus of the left eye. Vision $\frac{2}{10}$ with each eye. Considerable astigmatism; at 20 feet, adduction 17° , abduction 6° , esophoria 1° . At 10 inches, exophoria 5° , on dissociation with 10° prism.

December 5, 1899. Under atropine $V = \frac{1}{10}$, O. U. The following correction was given which raised V to $\frac{4}{10}$ in each eye. O. D. + 1.00 D \ominus 4.00 cyl. ax. 10° ; O. S. + 1.25 D \ominus 5.50 cyl. ax. 180° . These glasses made considerable improvement. Vision was clear. Patient could work with comfort, she became less irritable and was confident she was all right.

July 7, 1900, nearly seven months later, she returned and said that something must be going wrong. Her glasses no longer relieved

¹ See *Merkel's Archives*, July, 1899.

² "Diseases of the Eye," 1896, p. 207.

³ *Ibid.*, p. 197.

her headaches though she saw clearly with them. Nervousness and sleeplessness were reappearing. Eyes were bloodshot and swollen mornings. Former pressure-pains on left side of head going to vertex and occiput were now more severe accompanied at times by the feeling of "cold water trickling down" the left temple as well as throbbing at the inner canthus of the left eye and numbness over it. Seven weeks ago burst into tears at her work in one of these attacks of headache. She feared she might go crazy with it. Re-examination of her eyes satisfied me that her glasses were not at fault. The muscle tests showed the same findings as before. In making my first examination in 1899, I had not omitted to make my routine examination of the nose; but I had not noted any fault, probably because impressed with the considerable error of refraction to which for the moment all blame was attached. I now examined with more care and found the septum somewhat deflected opposite to and against the left middle turbinate. The right turbinates were hypertrophied, the middle being overgrown into the deflection and touching the septum. The left middle turbinate was tightly compressed and exquisitely tender. July 10, 1900. From my experience with similar cases I knew that removal of the left turbinal was demanded and consequently removed it. July 11, 1900. The severe head-pain is gone. Some shooting pains on right side of the head and tinnitus in the right ear. Some tinnitus of a blowing character had occasionally been felt for a long time in the left ear but not before in the right.

July 25, 1900. For more than a week, the patient has been free from all her symptoms, her new sense of comfort being so marked that she "feels like a new person" and indulges in extravagant expressions of delight.

October 23, 1900. Three months have elapsed since the last record. No headaches, no discomfort during the period. Patient sews all day without discomfort. There are no nervous spells, irritability, nor fear of going crazy. The muscle tests show little change. Adduction 15° , abduction $6\frac{1}{2}^\circ$. But, whereas there was at the near-point a slight exophoria of 5° , now there is equilibrium.

February 8, 1901. Comfortable use of the eyes has continued to the present time. All severe symptoms are a thing of the past. The patient is contented and satisfied that now she is all right, having enjoyed six months of freedom from the former symptoms and terrors. It is noteworthy that the nervousness and irritability which characterized her former state have disappeared. Besides, the tinnitus of the left ear which had been obtrusive enough at times to be greatly disturbing, has been gradually diminishing.

Case II.—E. A., girl of nineteen years of age, in good health, sensible and without unusual nervous susceptibilities, decidedly not neurasthenic.

Two years ago had "grip." Following that had colds in the head almost constantly, even during the summer of 1899, as well as during the winter of 1899-1900. She had occasional twinges of rheumatism in the right shoulder in winter. During this period the eye-lids felt heavy and smarted, the eye-balls pained and the forehead ached, especially over the right eye. She would often awake at night with pain referred to the right ear. Use of the eyes in reading caused headaches, so that she gave up reading. In July, 1900, she consulted the best oculist known to her, an eminent man of cosmopolitan reputation, a member of the American Ophthalmological Society, who examined her eyes with great care first without a mydriatic, afterwards with a mydriatic. He prescribed for her as follows: O. D. + .25 D. cyl. ax. 180° ; O. S. + .25 D. cyl. ax. 90° . Recognizing muscular imbalance, he advised her to have prism exercises which she was at that time unable to take. These glasses were worn with some benefit, but they did not give her enough benefit to enable her to read without headaches.

When I first examined her, October 11, 1900, I found her vision O. D. = $\frac{10}{10}$, O. S. = $\frac{9}{10}$. Very slight astigmatism at 90° , for which her glasses seemed a full correction. Media clear, fundus normal. Adduction 12° , abduction $6\frac{1}{4}^\circ$, exophoria 1° . At the near-point, exophoria 12° . No improvement on exercise of muscles. November 17, 1900. At near-point, exophoria 10° . At $20'$, adduction 15° , abduction 6° , equilibrium, no hyperphoria. Still has same discomfort on use of the eyes. Both middle turbinates are tangent to the septum, but the right is pressed tightly against it. She gave the history of a fall upon the ice some years before in which the nose received a severe impact and bled profusely. There was just enough deflection of the septum against the right middle turbinal to lay that fall under suspicion as the cause of it. At this time it is impossible to carry adduction beyond 15° . Removed the right middle turbinal.

November 25, 1900. At near-point, exophoria 9° . At $20'$, adduction 25° , abduction 7° , esophoria 6° . November 27, 1900. At near-point exophoria 8° . Adduction 29° . December 2, 1900. Patient reads an hour at a time without discomfort, after which she perceives tire on further use of the eyes. At near-point an initial exophoria of 2° gradually passes to 4° , 6° and even 8° . But, on exercise with prisms to run up adduction to its limit, exophoria at the near-point disappears and an initial esophoria of 2° passes slowly to 4° where it is maintained during the examination. December 6, 1900. The same behavior of muscles for near and on exercise with prisms. At 20 feet, equilibrium, esophoria 2° and 3° are obtained by various tests.

Tests were made every few days and prism

exercises given until December 16th, when at the near-point there was initial equilibrium passing slowly into exophoria 1° slowly ascending to 8°. After prism exercise in which adduction reached 55° the near test showed at first equilibrium rapidly leaping up to esophoria 24° and then slowly subsiding to esophoria 10° which is maintained during the examination. Reads with comfort. The patient has not since been examined; but on January 1, 1901, she writes that she can read all evening without the least discomfort, keeping this up from day to day without wearing her glasses.

Case III.—Miss A. B., twenty-two years of age, bookkeeper, mentally well-poised, not especially nervous, complained on May 1, 1900, of having had severe headaches for some years which were becoming more frequent and more severe, until of late they occurred almost daily and were "terrible." O. U. V = $\frac{9}{10}$. Javal O. U., .50 cyl. ax. 90° with the rule. Accepts +.50 S = $\frac{10}{10}$. Adduction 33°. Abduction 6½°. Esophoria with Maddox rod 18°, prism 16°, cobalt 12°, Graefe 12°. At the near-point, esophoria 2°. There being good muscular balance for function at the near-point, cause was sought elsewhere for the severe symptoms. A menorrhagia of moderate amount two years ago had yielded kindly to treatment by her physician and was no longer in evidence. As in the other cases, however, a faulty condition of the right middle turbinate was found. The left middle turbinate was normal. The right was removed. Three weeks later, on May 23, 1900, adduction was 25°, abduction 6½°, esophoria 10° (with four tests). At the near-point esophoria was 7°. During these three weeks there was not once a severe headache, but there were some light headaches becoming lighter and fewer. June 25, 1900. Improvement maintained. October 19, 1900. No severe headache at any time since the operation. Comes to me at this time for some blurring of vision which has been with her during this whole period. Under homatropine V. O. D. = $\frac{9}{10}$ +. Javal .50 c. a. 85° + 1.00 s c + .25 cy. ax. 85° = $\frac{9}{10}$ +. V. O. S. = $\frac{9}{10}$ +. Javal .50 c. a. 90° + .75 S c + .25 cy. ax. 90° = $\frac{9}{10}$. Ordered

{ O. D. + .50 S c + .25 cy. ax. 85°
{ O. S. + .50 S c + .25 cy. ax. 90°

After wearing this correction two weeks, the patient reported freedom from blurring as well as from headaches.

February 12, 1901. Nine months without severe headache. Menstruation quieter and better since than before operation. At near-point esophoria 2° to 4°. Abduction 5°, adduction 37°, after which esophoria at 10" ran up to 18° and steadied itself at 14°. At 20 feet, esophoria 10°.

Case IV.—C. B. C., a young man twenty-two years old, matter-of-fact, steady, unemo-

tional, of good habits, came to me December 21, 1899, for examination of the eyes. He complained of headaches referred to the forehead over the left eye, pain in both eyes and in the eye-lids when at his work on books during the day and utter inability to read at night without great discomfort. For four years he had been wearing +.50 d. s., O. U., given him by an optician, without getting any abatement of his symptoms. I found his vision $\frac{10}{10}$ with each eye, astigmatism one-half diopter with the rule, adduction 17°, abduction 7°, exophoria ½°. At near-point, equilibrium. Under a mydriatic V = $\frac{9}{10}$. With —.50 S. V = $\frac{10}{10}$. Clearly this error did not cause his symptoms. Found a spur on the left side of the septum digging into the inferior turbinate in a very narrow nasal cavity, also the left middle turbinate tightly compressed against the septum. Nothing was done with the nose then. The patient made occasional visits to the office for prism exercises. Equilibrium at the near-point was not found subsequent to the first examination. Notwithstanding these exercises for 6 months, adduction became weaker and exophoria at the near-point greater, until on June 4, 1901, adduction was 10°, abduction 6° and exophoria 10° (at the near-point). Removed the spur from the septum.

July 13, six weeks later, the patient still has headaches on use of the eyes; adduction 17°, abduction 6°, exophoria, 2°. At the near-point exophoria 10°. Removed the left middle turbinate. July 17, 1900. No headache since the operation though the eyes have been in constant use. Exophoria at the near-point 7°, adduction 22°, abduction 6½°. July 25, 1900. Patient says he can now read any length of time without discomfort.

October 19, 1900. Patient has frequently had discomfort in use of his eyes since the last visit but more especially the last few weeks. Found synechial bands between the septum and the outer wall of the narrow nasal space. Severed these bands and introduced thin splint to prevent further adhesions. December 6, 1900. The means adopted were effectual. The nares remained freely open. The patient meanwhile had comfortable use of the eyes. At the near-point exophoria 4°, slowly advancing to 6°. Exercise with prisms carries adduction up to 20°, after which test at the near-point shows esophoria 4° to 10° slowly returning to 4° and remaining there during the examination. At 20 feet, all tests show exophoria ½°. The patient can read for three hours at night without discomfort. December 27, 1900. Practically the same findings and the same satisfactory report as three weeks ago.

January 15, 1901. Improvement in all particulars. Equilibrium at the near-point slowly passing into exophoria as high as 6°. Then prism exercise raises adduction to 32°, after which there is esophoria 4° at the near-point,

steadily maintained. The patient regards himself as cured of his trouble.

These few cases are selected as some of the types of many others under observation.

In Case I. the refraction was very faulty and seemed to be the adequate cause of the symptoms until complete and careful correction worn for six months failed to ensure relief though it gave fairly good and clear vision. But relief immediately followed removal of pressure between the middle turbinate and the septum. That relief has been complete and permanent and is accompanied incidentally by disappearance of a slight exophoria of 5° for the near-point at which there is now equilibrium and perfect comfort in constant use of the eyes.

In Case II. there was almost no error of refraction but there was decided exophoria at the near-point. Use of the eyes thereat gave headaches too severe to permit of use of the eyes in reading. The history of injury, the finding of pressure, the removal of this pressure, the restoration of comfort in use of the eyes at the near-point because of slow but sure recovery of force and sustained innervation of muscles as evidenced by the change from utter inability to exceed 15° of adduction before operation to ability to reach 55°, and finally the assertion of strength and control by these muscles in the exercise of their function at the near-point increasing on daily use of the prisms until now constant use of the eyes thereat is not only tolerated but enjoyed, these all constitute a congeries of facts and relations that give importance to the one new factor, ablation of the middle turbinal.

The error of refraction in Case III. evidently had nothing to do with the disturbing headaches, for these headaches were removed at once on removal of the offending middle turbinal when as yet no correction had been given for the error of refraction.

Yet during this period of exemption from headaches there was some blurring of vision until the correction was given. Meanwhile very little change took place in the behavior of the muscles: their strength was constant, their harmony of innervation was somewhat bettered. Esophoria for distance was lessened, that for near increased, a relation of adjustment occurring in such cases found associated with more comfortable use and both instantly falling to a minimum when the correction is worn. This betterment followed removal of pressure from the terminal filaments of the nasal branch of the ophthalmic.

In Case IV. only when the left naris was put right and maintained so, did the muscles manifest strength in adduction and good behavior at the near-point, their innervation for that function having again become responsive to efficient use. Hence there can be no question of asthenopia from error of refraction. Neither can there be an iota of question of a

neurotic constitution. It seems to be purely a matter of disturbance of innervation of the ocular muscles by irritation of a particular area of nerve distribution in the nasal mucosa.

That a larger proportion of cases of anomalies of the ocular muscles is dependent on this form of disturbance than has generally been suspected, is more than probable.

I wish here to draw attention to a paper in the *Medical Record*, January 30, 1885, by Dr. E. Gruening in which that careful and experienced observer of scientific phenomena gives the history of a series of cases in which treatment of the nose alone was effectual for the cure of the eye troubles although no symptoms were referred to the nose and treatment directed to the eyes had been in vain. He then employs this argument: If an irritant to the nose can cause lachrimation and other eye symptoms, then *a priori* a continuance of such irritation may keep up the disturbances; and, if treatment directed to the eyes fails to relieve them but treatment of the nose does, the more positive *a posteriori* argument presents itself—*causa sublata, tollitur effectus*.

ACUTE TRAUMATIC MALIGNANCY.¹

BY WILLIAM B. COLEY, M.D.,
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In a paper entitled the Influence of Injury upon the Development of Sarcoma, read before the New York Surgical Society, November 24, 1897, I called attention to the fact that a very large proportion of patients with sarcoma gave a history of antecedent injury, and I endeavored to show that such trauma had an important etiologic relationship to the tumor. A further and more careful clinical study of malignant tumors has confirmed my conviction that injury constitutes a much more important factor in the causation of malignant tumors, both sarcoma and carcinoma, than has been generally recognized. My earlier paper was based upon an analysis of 170 personal cases of sarcoma, of which number 46 cases or 27 per cent. gave a distinct history of trauma. Of these cases, *classified anatomically*, 18 were osteosarcoma, including 3 osteochondrosarcoma; 6 sarcoma of the soft parts. According to *pathological classification*, there were 29 cases of round-celled; 5 spindle-celled; 5 melanotic; 2 chondrosarcoma; 1 cylindroma; 3 mixed-celled sarcoma and 2 doubtful.

At my request, Dr. C. J. Kane, late house-surgeon of the General Memorial Hospital, very kindly made an analysis of one hundred cases of sarcoma treated at the General Memorial Hospital within the last three years, with the object of determining the relative frequency of antecedent trauma. His statistics give a larger proportion of cases due to in-

¹ Read before the Medical Society of the Greater City of New York, Nov. 12, 1900.

jury than was noted in my own cases. In 63 local injury of some form had been received prior to the development of the tumor; 27 other cases gave a history of chronic irritation and in only 10 cases was there a history of neither trauma nor irritation.

Of these 100 cases, 17 were small round-celled, 3 large round-celled, 25 spindle-celled, 6 melanotic, 7 chondrosarcoma, 16 osteosarcoma, 5 myelosarcoma, 2 angiosarcoma, 2 adeno-sarcoma, 4 fibrosarcoma, 3 mixed-celled, 3 myxosarcoma, 5 lymphosarcoma and 2 only in which the diagnosis was not confirmed by microscopical examination.

In 68 out of this series of cases the sarcoma occurred in the soft parts; in 32 in the bone.

The tumor was noticed to appear immediately after injury in 6 instances; in 16 cases it was first noticed from one to three months later; in 21 within three to six months; in 24 within six to twelve months; in 1, fourteen months; 1, seventeen months; 1, two years and 1, four years after injury.

Since the publication of my first series have observed 100 additional cases of sarcoma. The histories of these have been studied with much care, especially with regard to the question of antecedent injury. Forty patients gave a distinct history of injury prior to the appearance of the tumor and 8 others, a history of local irritation of some form. In 13 of these 40 the tumor developed within one month after the receipt of the injury, and in 8 of 13 cases within one week.

Adding these to the 18 in my previously reported list, occurring within one month after the trauma (8 within one week) we have a total of 31 cases that may be properly classed as examples of acute traumatic malignancy. Thus, of my entire series of 270 cases of sarcoma, 86 or 31.8 per cent. have a distinct history of antecedent trauma; while in 31 or 11.5 per cent. the tumor developed almost immediately after the injury. There is no special reason for separating these 31 so-called acute cases from the others, save for the fact that in these the connection between the injury and the development of the tumor is so clear and unmistakable that it cannot be lightly explained away as is too often attempted in the cases in which longer intervals of time have elapsed, on the theory of a poor memory or a vivid imagination on the part of the patient. If we can establish an etiological relationship between the trauma and the development of the sarcoma in the group of acute cases, the same relationship will probably be found to exist in the cases of slower development. The more I study the clinical aspects of malignant disease, the more firmly am I convinced that independent and oft repeated statements of intelligent patients with reference to any point, be it concerning heredity, diagnosis or trauma, are worthy of far more consideration than is usually accorded them by the medical

profession, and certain it is that the old opinion of the laity, that malignant tumors are frequently caused by blows and injuries, receives more and more support the more familiar we become with the actual facts. It is more than probable that, instead of overestimating the percentage of cases with antecedent trauma, we greatly underestimate it, for the reason that in many cases, especially those in which the tumors are of slow development, the patient has quite forgotten the injury.

The histories of the acute cases show that a very slight injury may be sufficient to produce the growth, and such an injury would probably have been forgotten, had the tumor not developed for months or years after. As recently as 1882, Harrison Cripps of London, although a believer in trauma as a causative factor in sarcoma, stated that not more than 7 or 8 per cent. gave a history of injury. This statement, I think, rested not so much upon facts as upon imperfect histories and upon small series of cases.

Löwenthal, who collected 316 cases of sarcoma in medical literature, giving a previous-history of local injury, found that of 190 cases in which the interval between the receipt of the injury and the appearance of the tumor was definitely stated, the sarcoma was observed within one month of the injury in 135. The statistics of Wolff show that 20 out of 100, or 20 per cent., give a history of trauma; while in a series of 344 cases of carcinoma, of the same author, trauma was observed 42 times, or in 12.2 per cent. Samuel Gross, who collected reports of 165 cases of sarcoma of the long bones, found that more than 50 per cent. show a history of trauma.

As evidence that greater attention is given to trauma at the present time may be cited the recent paper of McWilliams (*MEDICAL NEWS*, April, 1900) giving statistics of 100 cases of carcinoma operated upon at the Presbyterian Hospital of New York, within the last ten years. This series shows a history of antecedent trauma in 44.6 per cent. of the cases.

As regards the influence of trauma upon the development of malignant tumors, Sir William Mitchell Banks, in his recent and very valuable lectures on Cancer of the Breast, states that he has never been able to make out that milk abscesses or scars of incisions have been the starting-points of cancer, and that he has no recollection of a patient directly attributing cancerous growths to them. On the other hand, he says that he has very often heard most clear and circumstantial histories narrated in which blows were asserted to have been the primal cause of the trouble. The argument that men are more liable to blows on the breast than women, he disputes, stating that women are always in the way of getting knocks from young children or from

articles of furniture, such as cribs, beds, etc., among which they are constantly working. Besides, the breast of a woman being so much larger and more prominent, it is much more exposed to injury than that of man. He states that he has "received very succinct accounts from intelligent women of blows from pieces of furniture or kicks from young children in which there was pain immediately afterward, sufficient to place the exact spot in the breast. Then the pain has gone away, they have almost forgotten the circumstance until some day a lump is found in the old site of injury." Banks believes that, if it were true, as has so often been stated, a woman's attention is directed to the tumor which is already lying concealed in her breast, she would discover it at once on receipt of the injury. The theory that the patients invent the story of previous injury, after finding a lump, he believes, is inconsistent with the high degree of intelligence of many of his patients. Roger Williams says that "in examining the histories of 137 women with cancer of the breast, 1 out of every 4 made a statement of previous trauma. In conclusion Banks says that "after the way in which the vulgar, but rooted belief in the infectiousness of phthisis of the Italian peasant has, in the light of modern discovery, triumphed over the contemptuous disbelief of the whole world of medicine, I am not disposed to abandon all belief in statements of women whom we will even admit to be anxious to find a cause for their malady. Constant repetition from different sources strengthens even a weak tale, provided the evidence be steadily in the same direction. I have investigated these stories too often not to feel that, stripped of all exaggeration, there is a distinct element of truth in them. Remember, I do not make any attempt to assert that cancers of traumatic origin are at all frequent, but I believe in the possibility, and, indeed, in the strong probability of their occurrence."

With reference to the influence of trauma upon tuberculous joint disease Banks states, "I am not one of those who look for a mechanical cause of cancer in virtually every case, but I venture to say that there is no practising surgeon in this country, who has much to do with joint disease, who does not recognize the immense importance of wrenches, blows and sprains in the production of early inflammatory changes in and about joints, which ultimately end in what is known as articular tuberculous disease. I was educated in exactly the opposite view, namely, that the tales which the mothers told about injuries to their children's joints were all nonsense, but I was forced out of this belief by the irresistible arguments of experience." He further adds that "one feels the more inclined to this view from the knowledge that acute traumatic malignancy is a well-recognized disease. Scattered

throughout the medical journals are so many cases of its occurrence that no possible doubt can be entertained about its existence."

Sufficient evidence has been presented, I think, to prove the existence of definite histories of antecedent trauma in a large proportion of cases of malignant disease. It remains for us now to briefly consider whether or not there is any etiological connection between the injury and the development of the tumor. Numerous conjectures have been made in efforts to explain these facts. The theory of so-called constitutional diathesis has perhaps had the largest number of supporters, among whom may be mentioned Butlin, Barwell and many of the German surgeons. Butlin believes that the injury would be harmless unless occurring in a person having this constitutional diathesis. The theory of a local predisposition, which may be either inherited or acquired, is held by Virchow who claims that mechanical irritation or injury produces a specific disposition of the tissues for tumor development. Krönlein regards traumatism as of little significance, believing that the local predisposition is due to a defective embryonal development. Lowenthal whose careful study of 316 cases of sarcoma with a history of previous local injury makes his opinion worthy of consideration, believes that there is sufficient ground for assuming that external irritation or trauma may give rise to the development of a tumor and, therefore, that traumatism may be considered as a direct etiological factor in the development of malignant disease.

My own opinion as regards this relationship has not changed since the publication of my former paper. As I then stated, I believe that the relationship between antecedent trauma and the development of sarcoma or carcinoma can be most rationally explained on the theory that such tumors are infectious, or of micro-parasitic origin. The analogy between sarcoma and diseases known to be of infectious origin is very striking. The clinical evidence, aside from the bacteriological or pathological, points more and more strongly toward a specific infection as the cause of sarcoma. The similarity between sarcoma and tuberculous disease is so pronounced, not only as regards clinical symptoms, but also pathological characteristics, that trained pathologists not infrequently are forced to admit that they are unable to differentiate between a tuberculous tumor and a round-celled sarcoma.

Granting for the moment that malignant tumors are due to an infectious micro-organism—and I may add, the evidence in support of this theory is rapidly increasing—the explanation of the relationship between trauma and sarcoma becomes at once clear and satisfactory. We have simply to follow up the analogy between sarcoma and other lesions known to be of infectious origin, for example, tuberculosis, osteomyelitis and periostitis.

We know that tuberculous inflammations of the bones not infrequently develop after an injury in children previously in good health. I have personally observed a number of such cases and so many have been reported, as Banks has pointed out, that there can be no doubt as to the etiological significance of injury in these cases. Any explanation that will apply to the causal relation between trauma and tuberculosis inflammation will apply to sarcoma. The most probable explanation would appear to be, that the micro-organisms exist latent in certain individuals, and under normal conditions they remain harmless indefinitely. The local trauma diminishes the vitality of the tissues and, hence, their resisting power, and the germs previously innocuous, gain a foothold and develop.

We know that it is possible to have suppurative periostitis from traumatism without any lesions or breaking of the continuity of the skin. The micro-organisms which caused supuration must have been carried to the part by the blood, although the original starting-point of these micro-organisms we may not be able to locate accurately. The main conclusions to be drawn from the study of these cases are as follows:

1. Trauma is a very important factor in the causation of malignant tumors.
2. This relationship between injury and malignant tumors furnishes additional and by no means unimportant evidence in support of the infectious origin of such tumors.

The following cases are here reported as evidence bearing on the general thesis:

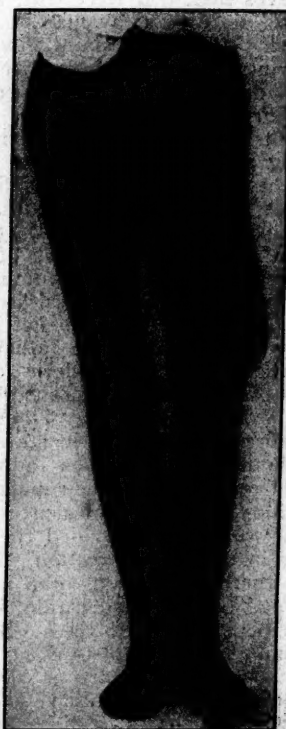
CASES OF ACUTE TRAUMATIC MALIGNANCY.

Case I.—Sarcoma of Femur.—T. B., forty-five years of age, male, blacksmith, without any hereditary history of cancer, was kicked by a horse on January 29, 1900, and sustained a small fracture of the lower end of the femur. The fracture was treated by the usual method of extension for a period of six weeks. As soon as the splints were removed, the patient noticed at the site of the fracture what he considered an abnormal enlargement, but the attending physician assured him that it was the usual callus which occurred during the repair of a fracture. This swelling, instead of diminishing in size, slowly increased and, finally, at the end of a few months became painful. About the middle of August, 1900, the bone at the site of the injury had increased so markedly in size that this, together with the increase in severity of the pain induced him to consult several other physicians. It was evident that a sarcoma had developed at the site of the injury. The patient saw me August 21, 1900, at which time physical examination showed the left femur to be two inches shorter than the right, and the patient was

unable to walk without the aid of crutches. At the lower end of the femur there was a tumor about the size of a child's head, smooth in outline, firmly fixed and apparently originating in the bone. The joint was not involved. The skin over the tumor was freely movable and normal in character, although somewhat tense. The tumor itself was fairly firm in consistence.

The diagnosis of sarcoma of the femur being unmistakable, amputation at the hip-joint was

FIG. 1.

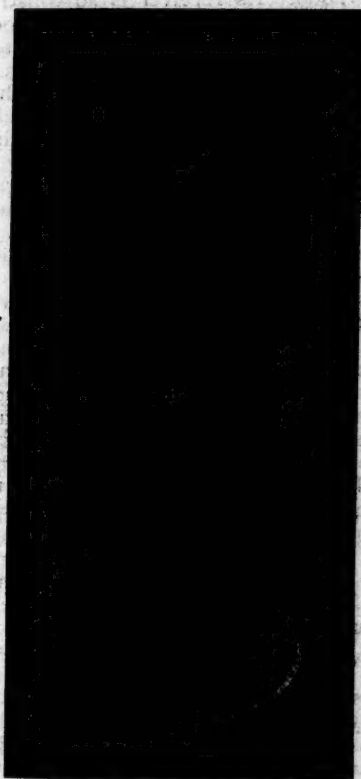


Case I.—Acute traumatic sarcoma of femur following fracture.

advised and performed by Wyeth's method, on August 29, 1900. Although the patient's general condition was not very good (he had a loud, well-marked systolic murmur). He made an uneventful recovery, the wound healing by primary union except at the site of the drainage-tube. The specimen of the tumor and the photographs which I present, prove conclusively that the tumor started at the exact site of the fracture. Several cases have been hitherto observed, and I have myself reported one, in which sarcoma developed at the site of an old fracture, but this is the first case with which I am familiar in which the tumor developed immediately after injury. In other words, this is a true example of acute traumatic malignancy.

Case II.—Round-Celled Sarcoma of the Testis.—M. M., aged twenty-eight years, driver by occupation, with good family history. Early in January, 1900, the patient fell astride a bar, injuring the right testis. A swelling appeared at once and never disappeared. About a week after the injury, the patient noticed that it was increasing in size. There was no pain at first, but later there developed a dull, dragging pain. Two weeks after the injury the patient went to an outdoor patient department in this city and was tapped for supposed hydrocele. Nothing but blood, however, was found. A second tapping, a few days later, gave the

FIG. 2.



Case I.—Acute traumatic sarcoma of femur.

same result. On February 8th, or one month after the injury, I saw the patient for the first time. Physical examination showed a tumor of the right testicle, the size of an orange, soft and even semifluctuating in consistence, symmetrical in shape. There was little or no tenderness. The diagnosis of hematocele, with the possibility of sarcoma, was made and immediate operation advised. Two days later I operated and found about four ounces of dark, grumous blood in the tunica vaginalis, and the testis itself was enlarged about three

times its natural size. Believing the disease to be malignant, I removed the testis together with the cord well up beyond the internal ring, the canal having been opened as in Bassini's operation for hernia. The first examination of the pathologist pronounced the disease non-malignant, but later a more careful examination of a large number of sections showed it to be round-celled sarcoma. There was at this time no evidence of the trouble in the abdomen. Two weeks after leaving the hospital, the patient was admitted to Dr. B. F. Curtis' service at the Bellevue Hospital, with a large abdominal tumor. Exploratory incision was made on March 16th, or five weeks after the date of the first operation. A tumor, the size of a man's head, was discovered in the region of the right kidney. A portion of the growth removed for microscopical examination proved to be round-celled sarcoma. The patient died April 18th of progressive cachexia.

This case is one of the most remarkable illustrations of acute traumatic malignancy that I have observed. The sarcoma developed immediately after the injury in an organ, up to that time perfectly normal, and ran such a rapid course that scarcely more than three months elapsed between the time of the injury and death of the patient.

Case III.—Sarcoma of the Ischium.—W. M., male, aged twenty-two years. In the winter of 1896, the patient fell upon the ice, striking severely upon the tuberosity of the ischium. The next morning he was not able to use his leg, and did not regain this power until three weeks later. A few days after the fall he noticed a lump at the site of the injury; it was hard and fixed to the pelvic bone, and continued to grow slowly in size until the time of my first observation, June, 1898, it had become a large inoperable, spindle-celled sarcoma.

Case IV.—Sarcoma of the Cheek.—D. L., female, aged forty years; good family history. In June, 1897, the patient received a blow from a fist on the left cheek. A swelling appeared at once and never disappeared, but gradually increased in size. It seemed to be situated between the skin and mucous membrane, just beyond the angle of the mouth. In about eight months it had reached half the size of a hen's egg and was removed. The disease recurred in a few months. A second operation was performed and, in November, 1898, a third, for recurrence. No microscopical examination of the growth made, but the frequent recurrences and clinical characteristics proved it to have been sarcoma.

Case V.—Small, Round-Celled Sarcoma of the Groin.—G. S., male, five and a half years old. In spring, 1899, the patient fell, injuring the right groin. A few days later a swelling was noticed in the right groin, which was soft and grew with such rapidity that it was supposed to be an abscess. Incision, however, proved it to be a very vascular, round-celled sarcoma.

The disease grew rapidly, and the patient died of exhaustion in April, 1900.

Case VI.—Sarcoma of the Thigh.—Mrs. T., aged thirty-five years, with good family history. In May, 1897, the patient fell from a bicycle, badly bruising her right thigh. A lump appeared at the site of the contusion at once and never disappeared, but after about a week the patient noticed that it was increasing in size, and consulted a physician. The tumor grew rapidly, and in December, 1898, had reached the size of a man's head. It had no connection with the bone, and evidently started in the fascia.

Case VII.—Osteosarcoma of the Left Humerus.—I. D., male, eighteen years old; family history good. In the winter of 1899, a brick, which had fallen from the height of three stories struck the patient a glancing blow in the right deltoid region. A short time afterward the patient noticed pain in the region of the injury, and a little later a swelling appeared which gradually increased in size and was firmly attached. It seemed to be part of the humerus. Removal of the humerus and scapula was successfully performed by Dr. Russell S. Fowler of Brooklyn, in March, 1900. Within six months the disease recurred at almost the identical location in the other humerus and grew with great rapidity.

(To be continued.)

THE AKOUPHONE AND ITS LIMITATIONS.

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MECHANICAL aids to hearing devised in past years have been many and varied. The most efficient were constructed upon some well-recognized principle of physiological acoustics and were intended to reach the labyrinthine acoustic terminals by concentrating and intensifying sound waves either through the external auditory meatus or by conduction through the bones of the head or face.

No one apparatus has been found applicable to every case and the latest production in this line proves no exception to the rule. In proportion to the number of really deaf people those resorting to mechanical aids are comparatively few in number. This seems to be accounted for by two factors, namely, the conspicuousness of these instruments and the intolerance of their aid by oversensitive acoustic nerves which are present in the great majority of afflicted individuals. The first is an objection which might be overcome by the cultivation of certain moral courage on the part of the patient while the second is a physical difficulty and as we shall see may prove a serious hindrance to the use of any mechanical aid based on the above principles.

The latest product of this kind is brought forward by Mr. Wilton R. Hutchinson, a

young electrical engineer from the South, who has spent years of work and study in bringing the apparatus to its present stage of efficiency and has given us by far the most intense and powerful reproducer of sound and one whose possibilities exceed those of all similar devices.

Without going into a description of the mechanical construction of this contrivance, the details of which are for the most part trade secrets, the instrument may be considered as a telephone whose electric force is supplied by an ingeniously compact storage battery of six volts. The transmitter is fitted with one or a series of dome or funnel-shaped resonators for the purpose of gathering in and concentrating sound waves from all sources in its immediate neighborhood. Its receiver is so constructed that all sounds conducted to it are reproduced or retransmitted with such force and intensity as to produce a searching and sonorous wave of peculiar intensity and penetration which is magnified still more on account of the closure of the external auditory meatus by the instrument which is held so as to completely cover it. The nature of this wave which gives a saw tooth character to its tracing is not yet understood.

In ordinary use the storage battery is carried fastened at some convenient place about the body, while the transmitter or wave collector may be held in the lap or laid upon a table. The receiver is fitted with a handle of suitable length so that it may be held in close contact with the ear with its vibrating diaphragm directly over the external meatus. This receiver is to a certain extent under control and the intensity of its action adjusted either by manipulating the adjustment of the diaphragm or by means of a sliding switch on the handle and manipulated by the patient's finger.

This is the outfit ordinarily recommended for the partially deaf. When used at the opera or lecture its transmitting end is reinforced by adding an increased number of wave gatherers, its receiving end being adjusted as nearly as possible to the toleration of the patient's auditory apparatus. When used for the instruction of deaf mutes a special transmitter is used and the receiver again adjusted to the comfort of the subject's hearing apparatus.

Deaf individuals who seek mechanical aid for their affliction (commonly without the aid or advice of an aurist) come generally under one of the following headings: (1) Those whose membrane and ossicles are intact, but functionally embarrassed by sclerosis or injury while the nerve is yet free; (2) those whose conducting apparatus is embarrassed by the absence of the ossicles or the greater part of the tympanic membrane, the nerve remaining free; (3) those in whom there has been disease involving, but not wholly destroying the labyrinthine nerve terminals—deaf mutes; (4) those whose deafness is

caused by destruction of the nerve function somewhere in its central course.

In the first class of cases we find in the great majority of cases flaccidity of the tympanic membrane and hyperesthesia of the acoustic nerve. The tensor tympani in such cases has no function and consequently fails to protect the hyperesthetic nerve terminals in the labyrinth against these new sound waves. Add to this the possibility of obstruction in the Eustachian tubes and we have with the receiver held close against the ear a condensation of sonorous waves of such intensity as to be practically unbearable. All noises in the immediate vicinity, such as the closing of a door or the shutting of a window, are here intolerable, and interfere with conversation in no uncertain way. To be sure the instrument is adjustable, but in these cases the nerve objects to the new stimulation even when at its lowest point of efficiency. It is well to remark in this connection that in some cases presenting a considerable degree of deafness, with symptoms of even labyrinthine involvement, such as vertigo and tinnitus, these alarming symptoms may depend upon purely mechanical causes and may wholly disappear after ventilation of the tympanum through the Eustachian tubes. Resort to any mechanical aid under these circumstances would be a serious mistake for such a patient.

When membrane and ossicles are both missing, and no involvement of the nerve is present, the patient being dependent entirely upon bone conduction, it would seem that the conditions were theoretically favorable for the use of the akouphone on account of the protection afforded the nerve terminals by the intervening bone. As a rule, however, such patients seldom resort to mechanical aids as they hear the loud voice fairly well.

In the third class of cases, which includes the deaf mutes, we find perhaps the greatest field for the practical use of this apparatus in teaching these unfortunates articulate speech. This was recently well demonstrated before the Otological Section of the Academy of Medicine, and judging from a single short lesson given to a deaf mute of eighteen years, who had practically never heard anything, it was easily evident that the articulation and even inflection of speech could be conveyed by these means to such individuals with a greater degree of success than has ever before been attained.

To the fourth class, with central lesions, no aid can be offered.

In judging the limitation of the akouphone as an aid to hearing the writer's opinions are as yet based largely upon theoretical considerations and upon the practical trial of a few cases of sclerotic middle-ear catarrh from his own and his colleagues' private practice.

This apparatus, although far and away the greatest resonator yet produced, is, from the

aurist's point of view, still crude, its present method of application being a good deal like providing an arc light for an individual with failing eyesight without any regard to the conditions of his refraction or optic nerve.

It is to be hoped that the otologists everywhere will aid in developing and applying this apparatus according to the principles of their science to the end that its shortcomings may be mended and its possibilities extended.

In conclusion the writer would quote the following extracts from the pen of Mr. Alexander L. Pach which appeared in the *Silent Worker* for March. Referring to the akouphone or akoulalion he says, "To all the deaf who are able I would say, if you have a vestige of hearing and are able to make a personal trial of the appliance, not once or twice, but several times in succession, do not lose your head and forget that your sense of feel is something marvelous. Take into consideration that the noise children make when you are trying to read is so intensified that, though a hearing person might not mind it, it jars on you. . . . To all the deaf all over the globe who are looking forward to emancipation, I would say that there is hope that in time we may have a device that will enable us to hear, but that that time has not been reached."

29 West 36th Street.

CLINICAL MEMORANDUM.

PERFORATING GUNSHOT WOUND OF THE CHEST WITH FRACTURE OF BOTH BONES OF THE LEFT LEG AND LACERATED WOUND OF THE RIGHT THIGH: RECOVERY.

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THE following instructive case occurred in the service of Dr. Robert F. Weir at the New York Hospital and is published with his direct permission, as illustrating the value of free use of sedatives in such conditions.

History.—A. J. H., U. S., thirty-one years old, single, bicycle policeman, admitted to the New York Hospital December 11, 1899. Three years ago his brother was in an insane asylum for three or four months following an injury to the head, and was discharged cured. Now follows the trade of machinist. In his mother's family several generations ago there was insanity also.

Personal Past History.—Indefinite, excepting as to typhoid fever fifteen years ago; severe attack with relapses, gradual complete recovery without sequelæ. Moderate alcoholic,

pronounced coffee habit. Always of nervous temperament. Early in June, 1899, suffered partial insolation; sick four days but hardly the same afterward; unable to stand heat, do hard work, sleep well; considerable mental anxiety and frequent severe frontal headaches with vertigo. These nervous symptoms did not abate after cold weather began.

Personal Present History.—Early in November, 1899, had persistent sleeplessness, while duties involved day work one week, night service the next. Hours for sleep were irregular and sleep when obtained not restful. Alcoholism is admitted by the family at this time, denied by the patient although he acknowledges having relied on alcohol in some form for support and taken more than was his wont. Became hyperneurasthenic, powerless to accomplish anything physical or mental, wretched digestion, very constipated, irregular bowels. Leading up to these conditions was the long strain of the Brooklyn Rapid Transit Company's strike, with extra work and irregular hours. Great exhaustion after it. Each officer was granted a five-day vacation, but that of the patient began December 5, 1899. His nervous state meanwhile became very bad. On returning from duty December 10th he had an attack of vertigo, unable to remember anything or obtain sleep, except after taking pills—not morphine—prescribed by the police surgeon.

The family describe the attempted suicide as follows: Arising December 11th, in a state of nervous excitement, he shot himself through the left chest; finding this effort futile, he jumped out of the window—third floor—upon an extension, rolled from this to the yard. He was admitted December 11th, at 7:35 A. M. Temperature 101.4° F.; pulse 116, small, thready, irregular. Respiration 30; profound shock, active delirium, abdomen flaccid, left chest less active than right. The ambulance surgeon administered Magendie's solution (m_{ix}) on reaching case and m_v more in the reception ward with atropine sulphate, gr. $\frac{1}{100}$, strychnine sulphate, gr. $\frac{1}{20}$, and stimulating enema of whisky. Reached ward 7.45 A. M.

Physical Examination.—This showed wound of entrance fifth space, $3\frac{1}{2}$ inches out, apparently just missing upper border of sixth rib and apex; wound of exit, eleventh space, $4\frac{1}{2}$ inches out, on left side. Clothing and skin both burned about the former. Left chest limited in action, indefinite signs of fluid in infra-scapular and infra-axillary regions. Pericardium not examined. Heart acting well. Abdomen slightly rigid, no distention. Simple complete Pott's fracture at left ankle. Large lacerated wound in the right thigh almost reaching the bone through the vastus externus and biceps, admitting probe upward about 6 inches, and almost accommodating the hand in its cavity.

Treatment.—Gunshot wounds were covered with 1-5,000 wet bichloride dressing; laceration irrigated clean, packed and covered with the same. Fracture left in temporary ambulance dressings. Strychnine sulphate, gr. $\frac{1}{200}$, every three hours hypodermatically. Atropine sulphate, gr. $\frac{1}{100}$, for respiration of 12 per minute or less. Heat to surface. Continuous hot rectal irrigation. Soon abandoned as seemed to disturb patient. Elevation of foot of bed. Nothing by mouth, except small quantities of cracked ice sucked through compress. At 3 P. M. examined by Dr. Weir. Abdomen rigid, distended, tender and tympanitic. Perforation of stomach suspected. Operative interference contra-indicated by general condition. Patient to be kept quiet absolutely with morphine.

Temperature during the first day, December 11th, rose to 104.6° F.; pulse ranged from 116-160; respirations 30-40. No food. Morphine (Magendie's m_{xxix} total). Slept little, but much quieted. General condition declining.

Second day, December 12th, nutritive enemata q. 4 h., were well assimilated. Very small quantities of boiled water by mouth. Urine negative. Examined by Dr. Weir and Dr. Bull, perforation of stomach with onset of peritonitis suspected. Operation contra-indicated. Ice-coil to abdomen. Boiled water stopped, replaced by small quantities of brandy and water, every half-hour. Magendie's solution, m_x total. No dressings as patient to ill to be disturbed. Remained quiet, sleeping at intervals. Dr. Peabody also saw patient during the day, concurred in probable diagnosis and treatment and established existence of fluid in left chest and probably pericardium in small quantity. Temperature reached 104° F. and above all day, falling, late in the night to 102.2° F., pulse 120-160, respiration 18-32.

Third day, December 13th, general condition much better. Enemata assimilated. Ice-cap to head for pain. Volkman splint to leg. Thigh wound packed with iodoform gauze in bichloride, 1-5000 solution; changed later to large Mikulicz dressing of sterile gauze in Thiersch's solution and covered with rubber tissue. During the night patient drank copiously from the ice-coil tube in spite of attendants. No bad results. Hence diagnosis of gastric perforation abandoned and mouth feeding began; clear soup, 5ii, q. 2 h. cracked ice and boiled water allowed. Total Magendie's solution, m_{xxiii}. Temperature 100.6° - 102.2° F.; pulse 102-140; respiration 20-32.

Fourth day, December 14th, generally stronger, much better. Mouth feeding increased, rectal feeding, every six hours. Heat to surface stopped. Nitroglycerine, every three hours, gr. $\frac{1}{60}$, hypodermatically. Dressings as before. Slept fairly well and long. Total Magendie, m_x. Temperature 101° - 102° F.; pulse, 96-120; respirations 24-28. Slept well at intervals.

Fifth day, December 15th, signs of peritonitis disappearing. Ice-coil stopped. Treatment otherwise the same. Magendie's solution, total m xiii; slept well. Much improved. Temperature 101° - 102.4° F.; pulse 96-120; respiration 24-28. Dressings same.

Sixth day, December 16th, large sloughing mass removed from thigh; 1-100 carbolic acid wet dressing applied. Full fluid diet. Rectal feeding stopped. Temperature 100.6° to 101.8° F.; pulse 92-116; respiration 20-24. Sleeping much better and for longer intervals. Total Magendie's, m xviii.

Seventh days, December 17th, all conditions same. Slept very little, Magendie's solution, total, m viii. Temperature 100.4° F. to 102° F.; pulse 84-100; respiration 16-32. Still gaining.

Eighth day, December 18th, irrigation of thigh wound begun, otherwise dressing the same. Morphine, gr. $\frac{1}{4}$; codeine, gr. i; trional, gr. xx, as sedatives, slept quite well. All other conditions about the same. At no time was there hematemesis or hemoptysis. The management of the pistol-shot wound was daily changes of the wet dressings, followed by dry sterile dressings and aristol powder. Neither wound suppurated. The entrance cast off a few small sloughs. Otherwise they healed promptly. The laceration was treated in the usual way, and healed well after two abscesses developed in the thigh high up. The fracture united in good position and with full function after the usual plaster splint.

Skin grafts on the thigh wound were made January 15th; one-half succeeded. The wound healed fully leaving function fair. The patient was allowed to sit up, on chairs, on January 27th, and February 10th (about) was permitted to use crutches. He was discharged May 8, 1900, cured.

Heart, pericardium and abdomen negative, left chest showed few signs of thick pleura. Right thigh had a small sinus persisting. Throughout the acme of the condition enough sedatives, morphine, etc., was given to procure absolute quiet and to remain just within actual deep sleep. The patient could be aroused for his medication, but otherwise was indifferent to his surroundings though not really asleep. This forced quiet appears to have saved his life.

MEDICAL PROGRESS.

Ice-Bags in Lobar Pneumonia.—GEORGE L. COLLINS (*Boston Med. and Surg. Jour.*, March 28, 1901) reports in detail nine cases of lobar pneumonia in which cold was applied by means of ice-bags. He summarizes the cases as follows: In only one case did the ice-pack cause discomfort. In not one case was the crisis accompanied by dangerous collapse. The

ice-pack was used to abort cases just beginning, in cases with well-marked signs, and in cases showing resolution. Accompanying signs of bronchitis were not considered contraindicatory. The indication for the use of the ice-pack was in each case high temperature, and not physical signs. The ice-pack was removed only when the temperature became lower. The average fall of temperature was 4.5° F. This fall occurred in all but one case within forty-eight hours after applying the ice, in most cases it was within twenty-four hours. The white corpuscle count invariably began to fall with the temperature, and reached normal in about one week after the temperature became normal. The ice had no effect apparently upon the physical signs.

Malignant Syphilis and Zittmann's Decoction.—In very malignant cases of syphilis that prove rebellious to the influence of mercury or the iodides GRANVILLE MACGOWAN (*Jour. Cutaneous and Genito-Urinary Dis.*, March, 1901) recommends the use of the decoction of Zittmann. He reports, in detail and with photographs, a case in which this decoction was very efficacious. In the preparation of this decoction the writer follows the original formula. The decoction spoils easily and should be kept in an ice-chest. The following formula is for enough to last for from six to ten days. Bruised sarsaparilla root z iv, water z 280; (Package No. 1) Fennel seed, anise seed, aa grs. 80, liquorice root (cut), senna leaves, aa z ss. Digest the sarsaparilla root in water for twenty-four hours, then add package No. 1, and bring to a boil, while suspended in it in a linen bag is: (Package No. 2), Powdered alum, powdered white sugar, aa z ii, calomel grs. 80, cinabar, grs. 20. Boil gently until the quantity is reduced to a gallon, or a little less, then strain through a fine cloth, and put up in bottles holding a little more than a pint each. Label this: Zittmann's Decoction, No. 1. To the dregs of this decoction add the contents of package No. 3, consisting of cardamon seeds, cinnamon bark, liquorice root, aa z i. Pour in z 280 of boiling water, and cook to a gallon. Strain, and bottle as before. Label: Decoction, No. 2. The writer directs that both the stronger, No. 1, and the weaker, No. 2, be given each day, the first for its purgative and diaphoretic effect, the second for its diuretic properties. The taste of these mixtures is not very nice, but the nausea caused by them, when given in large quantities, can be overcome. MacGowan uses these as follows: The patient takes a light breakfast at 7 A. M., and at 9 A. M. four ounces of the stronger decoction as hot as he can drink it. This dose is increased one or two ounces each day until he is taking as near a pint as he can without vomiting. This dose will purge the patient two to four times a day. He has a light lunch at 12.30 and at 3.30 P. M., while in bed, takes from half a pint to a pint of the weaker decoction.

tion, cold. Later the patient has an alcohol rub, and at 6 P. M. a good dinner, without any green vegetables or fruits. No mercury or other drug is used while the decoction is being given. Early in the second week the improvement will begin to be visible. In the fourth or fifth week the patient will be on the highroad to recovery. When the patient's nails and ear lobes are pink, and the eye clear, mercurials can be employed to finish the cure.

Bottle in the Rectum.—W. M. A. ANDERSON (*Brit. Med. Jour.*, March 9, 1901) reports a case in which a glass bottle was found bottom upward in an adult rectum. He prepared to do a posterior median proctotomy back to the sacrum and coccyx in order to remove it, but first tried traction with a uterine ecraseur, whose wire had been bent to a right angle with its axis. At first the bottle did not move. On exploring with the finger he found that the concave bottom was acting as a sucker and resisting. When air was admitted beyond it, the bottle slipped out. Passed in with the aid of much vaseline, the bottle was of such size as to fill the bowel and cause great pain.

Ethyl Chloride as an Anesthetic.—W. J. MCCARDIE (*Lancet*, March 9, 1901) says that ethyl chloride has the following advantages as an anesthetic in minor surgery and some of the shorter procedures of major surgery and gynecology, such as involve anesthesia for about thirty minutes or less: (1) Rapidity of its action and (2) of its recovery, each being about two minutes, (3) almost total absence of after effects, (4) safety in cardiac, renal and pulmonary disease when ether and chloroform are contra-indicated or dangerous. Its main disadvantage is that except in children muscular relaxation is not marked and rigidity may be present to a great degree. The Brener mask obtainable in Vienna is the best for its exhibition.

Recent Notes on Treatment of Diphtheria.—FENN of Manchester, in the February number of the *Journal of Laryngology*, gives a chapter of notes reviewing recent papers on the treatment of diphtheria. Eyre has found in milk supplied to a school the short pathogenic or sheath variety, as well as the Klebs-Loeffler bacillus; and Macfadden and Hewlett found bacilli in the throats of pigeons identical with the Klebs-Loeffler bacilli except as to their pathogenic and toxic properties. Richardière and Tollemer found virulent bacilli floating in dust of the air in a diphtheria hospital and which had not been disinfected for several weeks. They were absent after disinfection. Trevelyan found diphtheria bacilli in cases of stomatitis with membrane without general symptoms. The value of antitoxin is now generally admitted by the medical press by both statistical evidence and clinical observation, in both hospital and private practice. In Queensland the death-rate in five antitoxin

years is little more than one-third of previous records. In Chicago of 4,071 cases in three and a half years treated with antitoxin only 6.77 per cent. died. In the Children's Hospital at Brisbane, there was reduction of mortality from 42.2 per cent. to 12.6 per cent. Goodall shows that in the Metropolitan Asylums Board Hospitals for 1896 and 1897 a high mortality of 50 per cent. was reduced under antitoxin to 5 and 4.1 per cent. for these two years. The most forcible objection to statistics is their inclusion of cases only bacteriologically recognized as diphtheria. This cannot hold for laryngeal cases. In these latter, whose diagnosis is the same as before, under antitoxin treatment there is less need for tracheotomy. The mortality in hospital cases has been reduced from two-thirds to one-fourth of the cases operated on. Goodall says: "Whereas, in the pre-antitoxin days of 100 tracheotomies you could not expect to save more than 29, now you can expect to save no fewer than 53; of laryngeal cases not operated on, in those days not more than 48, now not fewer than 75; of all cases (operated on or not), then not more than 34, now not fewer than 49." There has been a tendency to increase the dose of antitoxin. Turner has given 6,000 to 12,000 units for a dose. Biernacki in one case gave two doses each of 18,000 units within fourteen hours. "Antitoxin should be given for effect, and most assuredly not for specified doses." All evidence calls for early administration. In the 4,071 cases treated in Chicago, the mortality of those treated on the first day was only 0.28 per cent., of those treated on the fourth day 11.39 per cent., of those treated after the fourth day 25.37 per cent. Statistics of Goodall and Turner teach the same lesson. Tonkin in 200 cases found mortality 3 per cent. for those treated in first three days and 12 per cent for all the other cases. Post-diphtheritic paralyses have increased since introduction of antitoxin. This is explained by the survival of serious cases which in the pre-antitoxin days would not have lived. The type of paralysis has become on the whole less severe, at all events less fatal. Goodall states that of 1,580 cases of paralysis after antitoxin treatment, only 5.7 per cent. belonged to those treated on the first day, and 10.1 per cent. to those treated on the second day, and "only one case of severe paralysis occurred among those treated on the first two days with no death from paralysis, whereas 51 severe cases and 3 deaths from paralysis occurred among those who were not brought under treatment till the fourth day or later." There is some evidence that large doses, i.e., not less than 4,000 units of antitoxin, are more effective than small ones, both in preventing paralysis and in reducing the mortality due to it. Antitoxin reduces the likelihood of the occurrence of nephritis. With early treatment albuminuria may not appear and will soon disappear. At the Brisbane Hospital local throat treatment has been abandoned. Bolton found bronchopneumonia.

nephritis and other inflammations and also sudden death follow injection of antitoxin, but nothing of this kind has occurred in the London hospitals. He believes the incidence of albuminuria is increased by antitoxin, but the condition is transient and slight. "The complications of antitoxin are at times very painful and inconvenient, but quite harmless." Causes of failure are, as given by Trevelyan, (1) its too late administration; (2) its sufficient dosage and strength; (3) presence of mixed infection. The controversy as to the utility of antitoxin is well-nigh closed, and "those practitioners who neglect or refuse to use this remedy in suitable cases are in so doing assuming a grave responsibility."

Non-Operative Cases of Acute Mastoiditis.

—GORHAM BACON (*Archives of Otolaryngology*, February, 1901), reports the histories of forty consecutive private cases of acute purulent otitis media complicated by acute inflammation of the mastoid cells. Radical operation was necessary in 10 cases. In 2 of these 10 a subsequent operation for sinus thrombosis, one proving fatal. In 30 cases, or 75 per cent., the mastoid cells were not opened. The patients varied from six to sixty-five years of age. A great many cases of mastoid disease can be cut short in the first stage, if, instead of administering opiates to relieve the pain, or perhaps phenacetin or quinine to reduce the temperature, we apply leeches at once." A leech, natural or artificial, is best applied just in front of the tragus. Patient should be put to bed with little to eat, calomel given and tincture of aconite in drop doses, if high fever. If the mastoid process is tender on pressure, the Leiter coil should be applied and the cold should be kept up for at least forty-eight hours. Meanwhile, as soon as there is bulging of the drumhead "a free incision should be made in the membrane along its posterior border, from a point behind and below the stapes to the lower border of the drumhead, and close to the bony canal. . . . In all cases of scarlet fever, measles, diphtheria, influenza, and especially when the infection is due to the streptococcus or pneumococcus, it is advisable to make an early incision in the drumhead." After this douche the ear frequently with a warm boracic-acid solution (3i to 3viii), or bichloride (1 to 3,000), to promote the discharge. A free incision should be made where the spontaneous rupture is too small. Sometimes, even when operation on mastoid seemed imminently unavoidable, a further free incision has decided the recovery without further interference. The writer is not opposed to the mastoid operation, but finds he has fewer cases requiring it since he has adopted this plan of treatment. If, after employing above treatment and finding that the temperature remains elevated after a profuse discharge, there is still tenderness over the mastoid, then operation upon it may be unavoidable. This is all the more likely to be the case with streptococci and pneumococci in the pus from the tympanum. The lungs should be examined for pneumonia. Strict and daily watch should be kept for first in-

dications for opening the mastoid whilst doing all possible to avoid that step.

Sexual Irritability of the Male.—It is said that 25 per cent. of all men are at some time affected with what is called sexual irritability. A. SANDER (*Indian Med. Rec.*, Jan. 30, 1901) divides them into three classes; one belonging to the lithemic type, being usually fair, large stature, flabby muscles, and although appearing healthy their powers of elimination are defective and their urinary tract is thus irritated. The second class is the nervous type, inclined to a great variation of emotional excitement. Their sexual desire becomes an uncontrollable factor like various other impulses of their unstable nervous system. The third class comprises those in which gonorrhea has been the efficient cause. For the first and second classes the first requisite is a moderate and regulated amount of exercise, such as walking in the open air. The lithemic are frequently benefited by considerable exercise while irritability may be kept up by undue physical exercise on the part of the "neurasthenic." The diet of the lithemic should be principally of fruits and green vegetables—avoiding too much meat, coffee and alcohol. Fish and poultry are good. To aid elimination he recommends:

R Sod. et pot. tartrate. 60.0 (3ij)
Pot. tartrat. acid. 30.0 (3j)

M. et Sig. One teaspoonful in water each morning.

To allay the sexual passion of the neurasthenic one-dram doses of fluid extract of salix nigra one-half hour before retiring are usually effective. As a nerve stimulant arsenic in combination as:

R Fowler's solution 4.0 (5j)
Fl. ext. ergot. 12.0 (3iij)
Tr. capsici 0.8 (m̄x)
Glycerine 30.0 (3j)
Aque 240.0 (3viiij)

M. et Sig. Half an ounce three times a day after meals.

Arthritic Edema of the Eyelids.—These transient edemas which come on without warning, last a few hours, then disappear to come again in the same way, without coincident fever, albuminuria, or cardiac lesion are usually attributed to anemia, scrofula, angioneurotic phenomena, nervous explosions, etc. GAILLARD reported two cases, one following an attack of peliosis rheumatica, the other just preceding an attack of true articular rheumatism. A. TROUSSEAU reports five cases (*La Presse Méd.*, Mch. 6, 1901) four in young girls in whom each appearance of this edema was followed by acute articular rheumatism, and the other in a man of forty-two years, afflicted with gout. He has seen the edema alternate with that of other regions especially of the genitals, and with other skin manifestations, erythema, eczema, etc.

Active Principles of Digitalis.—There seems to be an almost hopeless confusion about the relative values of the various glucosides of digitalis. One difficulty arises from the fact that the German preparations are derived from the seed, while our official drug is the leaf. J. W. ENGLAND (*N. Y. Med. Jour.*, April 6, 1901) says that digitoxin is extremely irritant, frequently producing abscesses when used hypodermically and requires several hours to produce its effect. He has prepared a "tincture of fat-free digitalis" made by exhausting freshly-ground digitalis leaves with pure benzoin, percolating with diluted alcohol and neutralizing with ammonia water. All the proximate principles are made soluble in water and not partly so as in the official tincture. This is an important feature for all compounds must be made water-soluble before they can be absorbed. Experiments have shown that this preparation acts quicker than the ordinary tincture, in from fifteen to thirty minutes, and hence is considered a more valuable mode of administering the active principles of digitalis. Digitoxin usually requires five to six hours, to produce cardiac or renal symptoms and is very slowly eliminated and hence is not looked upon as the most valuable therapeutic principle of digitalis.

THERAPEUTIC HINTS.

Acute Articular Rheumatism in Children.—In children the salicylates must be used sparingly and are best given in large doses continued for only a short time. Used thus they may give prompt relief, but both stomach and heart must be watched. Rest in bed is the only safeguard against endocarditis, and when this is established opium should be used in small dose. Alkalies should follow the use of salicylates. For the extreme anemia peptomangan and open-air exercise of such a nature as to strengthen the heart are indicated.—*F. C. Simpson, in Pediatrics*, April 1, 1901.

Alcohol for Children.—In the acute infectious diseases, the nutrition is maintained by the power of alcohol to prevent nitrogenous waste, animal heat is regulated by opening up the peripheral circulation, and the energy which is depressed not lost, as from the heart weakened by fever, is restored. Especially in those bad cases of diphtheria with sepsis or bronchopneumonia, or the septic nasolaryngeal cases in which antitoxin is of little avail, whiskey in conjunction with iron and mercury to give support, not stimulation, will directly save life.—*A. E. Bieser in Pediatrics*, April 1, 1901.

Antistreptococcus Serum.—LABUSQUIÈRE (*Annales de Gynécologie et d'Obstétrique*, March, 1901) reports twelve cases of puerperal infection treated by Blumberg with the serum

of Marmorek. In nine cases the lochia was examined bacteriologically. One severe case showed pure culture of anaerobic diplococci, no immediate result from injection, but subsequent cure. Case II. showed bacilli streptococci, and other cocci, and the patient died. Case III. had been seven weeks ill, and the lochia contained bacilli and anaerobic streptococci. This patient also died. In Case IV. with mixed infection the temperature began to fall the day after the injection, and was normal on the third day. Case V. was of mixed infection and, though ill for four weeks was apparently cured by one injection. Cases VI. and VII., with sterile lochia, the one having been ill for five days, the other for thirty-nine days, responded promptly to the serum. Cases VIII. and IX. gave pure streptococcus culture, the one responding directly to 20 grams (5vj) of serum, relapsing when the serum was discontinued after two injections, and progressing to recovery when the injections were resumed, the other showing no immediate change of symptoms, or fall in temperature, but gradually recovering. In three cases no bacterial examination was made and all were cured, though in one the injection was not used until the temperature had begun to break. A diffuse erythema, or a painful, red erysipelas-like area about the site of injection sometimes appeared, and in one case an erythema multiforme. The injections caused no albuminuria, but were followed for a single day by a good diazo-reaction.

Pneumonia and Empyema.—When pneumonia is complicated by empyema before resolution has taken place, PHILIP MARVEL (*Therapeutic Gazette*, March 15, 1901) advises against evacuation till the crisis has passed, unless the embarrassment to the breathing and circulation or evidence of danger from the toxemia should be such as to render relief imperative.

Silver Salts in Nasal Catarrh.—E. B. GLEASON (*Therapeutic Gazette*, March 15, 1901) recommends for atrophic rhinitis, spraying the nose once or twice daily with Dobell's solution, and sniffing up every four hours a little stearate of zinc containing gm. 0.065-0.13 (gr. j-ij) of silver nitrate to each gm. 4.0 (5j). For exuberant granulations, searing the stumps of polyps, etc., the nitrate of silver is too irritating, and the organic compounds should be preferred. If, however, a 12-per-cent. solution be painted upon inflamed tonsils and the inflamed lateral wall of the pharynx, a sense of great comfort follows. Painting thus two or three times a day is one of the best methods of aborting acute pharyngitis and tonsillitis, any affected tonsillar crypts having first been freed of pseudo-membrane. Hay-fever and nasal hydropnea are best treated locally by a spray of adrenalin, 1-5,000, or of 10-per-cent. aqueous extract of dried suprarenal every two hours or by pledgets of cotton soaked in the solution and placed within the nose.

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SATURDAY, APRIL 13, 1901.

DELAYED WIDAL REACTION AND TYPHOID RELAPSE.

THE Widal test has not entirely fulfilled the hopes held out by its discoverers. Certain cases of typhoid fever even in Widal's own hands failed to give the characteristic reaction though typhoid bacilli were afterward found in blood withdrawn from the patients' spleen. On the other hand the blood of the normal individuals and of some patients suffering from diseases other than typhoid fever, and without typhoid fever in their histories, has proved to be possessed of the agglutinative power. These reported pseudoreactions, however, grow fewer and fewer in number as the exact conditions necessary for the proper accomplishment of the test come to be better understood and are more perfectly complied with.

Widal's reaction is, however, a most useful diagnostic auxiliary and as it has come to be employed more and more, it has proved to be of value in originally unanticipated ways. Certain affections that clinically bear not the slightest resemblance to typhoid fever and were not suspected of being even remotely

connected with it have been proven recently to be due to the typhoid bacillus. Pneumonias, and meningitis constitute the most important types of these extra-intestinal typhoid fevers that have been running their course often to a fatal termination without a suspicion of their true bacterial origin.

One of the most inconvenient properties of the Widal test has been its tendency to give negative results in certain cases until very late in the disease. Sometimes the presence of the agglutinative power in the blood cannot be demonstrated until convalescence has been established or even until a normal temperature has existed for some time. The reason for this delay in the development of the characteristic agglutinating property is not understood. Of course there are many other things about the Widal test that are but ill understood and the problems involved demand serious study with the promise of fruitful results. When Widal first proposed the test he said that he was not decided himself as to whether the agglutinating power of the blood serum of typhoid patients was a manifestation of infection or immunizing reaction. From the frequent occurrence of the reaction in the early stages of the disease—the second week and sometimes earlier—he seemed inclined to consider the agglutinative power a phenomenon of infection.

Later the trend of opinion has been toward classing agglutination as a protective reaction—a manifestation of bactericidal power. Recent observations on the protective power of mother's milk would seem to confirm this view. The young of animals born from mothers, in whom artificial immunity to the influence of certain bacteria has been produced, are not immune by the fact of birth. If suckled by immune animals, however, they often acquire immunity. This immunity may not last for more than a few days after suckling ceases. It is well known that the power to produce agglutination of the typhoid bacilli may be conveyed through the milk of a mother in whose blood the reaction exists as the result of a past attack of typhoid fever. The reaction ceases to be present, however, in the blood of the child very soon after nursing stops. It endures at most for a week or two. In this there is a striking analogy to the artificial immunity to microbic action which is conveyed by the milk.

If we assume, then, that the Widal reaction is a manifestation of beginning immunization of the organism to the disease it will be readily understood that the delay in the appearance of the agglutinative power in the blood serum means the failure of the attacked organism to react in time for its own protection against the typhoid bacillus. In a number of reported cases the occurrence of the Widal reaction late in an attack of typhoid fever has been followed by a relapse of the disease. The organism had not at the end of an ordinary attack of typhoid fever sufficiently immunized itself to protect it from germs that invaded hitherto unaffected intestinal follicles.

This subject is as yet in need of investigation. The Widal test is by no means simply a positive or negative answer to the question, is typhoid fever present? It may prove to be a valuable prognostic measure that will point out the failure of immunization and the consequent danger of relapse. Its practical importance from this standpoint can be scarcely exaggerated. A delayed Widal reaction will be the indication for exercise of the greatest care in the resumption of ordinary diet. Relapses will not come as the surprise they have been heretofore and the practitioner will realize during the course of the first attack the necessity for the conservation of the patients' strength.

DEATH OF THE CHRISTIAN SCIENCE BILL.

THE Christian Scientists are audibly giving thanks for the power of prayer, and secretly for the power of the dollar. Seldom has lobbying been more persistent and more to the point than in the suppression of Mr. Bell's Anti-Christian Science Bill. And for good reasons; a business like that of Mrs. Eddy's is not to be lightly given up, nor a profession so easily acquired as that of the healing art by absent treatment to be set aside for the lack of a little judicious guidance in the lobby.

Had the medical societies been a little more alive, and a little less argumentative they might not have raised so many objections, and the bill might have gone through. As Mr. Bell said in explanation, "The New York County Medical Society and the New York County Medical Association diagnosed the case differently, and while they were quarreling among themselves, refusing obstinately to call into consultation legislative experts, the patient expired."

The trouble lay partly in the fact that no one knew just how to word a bill that would give every competent physician and druggist the right to carry on his profession, and at the same time put an end to the impostures of quacks of all grades. The element of faith and religion, that is so often the only impressionable component of a woman's mental caliber, stands out against the element of justice and common sense that characterizes most men in the medical profession. It is impossible to legislate emotions out of a woman, but it would not be impossible to protect, by a legislative act, the community from the effect of these emotions. To do this our fellow physicians, even at the risk of being thought unethical, must do battle with the absurdities that are being taught, and give lectures and write and generally express themselves on the subject of their profession. Dr. A. H. Smith and Dr. A. Jacobi, in discussing the "Duty of the Public to the Medical Profession" at the Academy of Medicine last week, both took the same stand as Dr. Lydston, whose paper was published in the MEDICAL NEWS of April 6th, that the medical man can help the public and the profession at large by bringing them into closer relations, and by educating the people to a correct appreciation of the merits of scientific medicine.

A PLEA FOR PROFANITY.

As Dr. John Brown finds a saving grace for little Marjory Fleming in the lack of the final "n" in her Dam! so Professor G. T. N. Patrick finds an excuse for mankind at large in the matter of profanity, by running it down to its primitive origin.

In his article, "The Psychology of Profanity," in the March number of the *Psychological Review*, the history of the race shows that most profane ejaculations are the fossil remains of religious terms or ejaculatory prayers, and that the history of profanity is bound up with the history of religion. That this has always been considered a deplorable state of affairs is shown by the punishment prescribed from the days when it was death in the Levitical law, till in the seventeenth century it was twelve-pence an oath in England. In those days "Goddam" was a mere nick-name for an Englishman, proving the inefficiency of legislating on matters of personal morals. The simple feeling that swearing is poor taste has made swearing unfashionable; but has not so eradicated the tendency, but what Pro-

fessor Patrick has found material enough to work out the answer to these two questions, "Why do men swear?" and "Why do they use the words they do?"

People swear when they are provoked, or angry, or surprised, or hurt, and it has been observed that the most dangerous men are not the hardest swearers. Where there is great emotion accompanied by great helplessness men swear. Philology shows us that swear words are the old forms of spoken language, and physicians find that in progressive aphasia profanity is often the last form of speech to be lost. Evidently, then, profanity is an ancient and deep-seated form of expression.

So far do the psychologists agree; but when it comes to the *why* of swearing they hold different opinions. Some hold that the emotion of anger necessitates the escape of the surplus nervous energy, and that when one inhibits the natural and primitive impulse to battle, this energy bursts forth through the organs of speech in the form of oaths. As such profanity is supposed to have a purifying effect on the system just as a "good cry" relieves the tension of anger.

Others hold that profanity is but a series of steps from the growls of animals who are in terror and who wish to strike terror. The angry primitive man tries to shock his enemy by calling on thunder and gods, and the angry modern man consigns him in tones of awful wrath to eternal punishment. When one gets a German accumulative oath like *Alle Weltkreuzmohrentausendhimmelsternundgranatensakrament*, one wonders who could stand before it. From the shock of terror there came the shock of temerity in taking holy names in vain, so that the greater the reverence of names of saints, or places, or deity, the greater is the shock to the man sworn at and supposedly the greater the relief to the man swearing.

WATER WAYS AND CONTAGIOUS DISEASES.

THE inauguration of a suit in chancery about to be brought by the Passaic Valley Protection Association for the monumental sum of \$10,000,000 against the city of Paterson calls attention to an important sanitary problem and to its medico-legal aspect.

For years the city of Paterson has been dumping its sewage, without modification, into the Passaic River where it has been carried to many towns below it and three given rise to numerous

cases of typhoid fever. The citizens living along the banks have therefore made themselves into an association for mutual protection and, by claiming extensive damages, hope to be able to compel the city of Paterson to take proper care of its sewage.

It would appear that in this enlightened era of sanitary science and humanitarian doctrines it should not be necessary to resort to legal means to compel a city to protect its neighbors, but corporations are said to be lacking in consciences and municipalities may need the sting of heavy damages to pay in order to compel them to make concession to the rights of others.

We commend the Passic Valley Protection Association in their action and trust that in the righting of their wrongs others, suffering similarly, may profit.

ECHOES AND NEWS.

NEW YORK.

Society of Medical Jurisprudence.—At the 158th regular meeting of this society, held Monday, April 8th, Dr. J. B. Huber read an interesting paper on "Faith Cure and the Laws."

Rochester Academy of Medicine.—The regular meeting of the Section on Surgery was held April 10th. Drs. Henry H. Covell, George E. Beilby, Edward W. Mulligan and Henry J. Williams presented interesting cases, and Dr. John W. Whitbeck read a paper on "Cancer of the Pylorus."

State Charity Board.—It is announced authoritatively that the bill to reorganize the State Board of Charities has been abandoned by its supporters. It was drafted and introduced at the instigation of Governor Odell, who, it is understood, has consented not to have it pressed, in view of the excellent reasons advanced by important and responsible interests, urging a continuance of the existing administration of the State's charities.

Reprint of Ephemeris.—For a number of years Dr. E. H. Squibb of New York has made a résumé of the modern advances in materia medica, pharmacy and the collateral sciences. This has been printed from time to time with other matters of cognate interest as the Ephemeris. This year No. 3 of Vol. 6 has been reprinted and termed the *Supplement to the State Medical Association Journal*.

Clinical Lectures on Hydrotherapy.—The trustees of the Riverside Association announce that the Medical Director of the Hydriatic Department, Dr. Simon Baruch, will give a course of lectures on Practical Hydrotherapy, on Thursdays at 2.30 P.M., at the Association

House, 259 West 69th street. The course is free to the medical profession.

New Anti-Hypnotism Bill.—The Senate Committee on Public Health reported on April 4th a substitute for the bill of Senator McCabe to regulate the practice and teaching of hypnotism, mesmerism, suggestive therapeutics, and other kindred practices. The substitute relates only to hypotism and mesmerism, and provides that any person who practises these who is not a duly licensed physician or graduate from an educational institution for the teaching of such practice, duly licensed by the Regents of the State, shall be deemed guilty of a misdemeanor.

The Doctors and the Vice Crusade.—Seven members of the County Medical Society have been appointed a committee to investigate the evils of prostitution in the tenement-houses from a physician's point of view. The committee consists of Dr. P. A. Morrow, Dr. S. A. Knopf, Dr. H. D. Chapin, Dr. C. W. Allen, Dr. L. D. Buckley, Dr. Ludwig Weiss, and, ex-officio, Dr. George B. Fowler, President of the society. It met for the first time on Thursday evening and organized with Dr. Morrow as its Chairman. After its work is further under way, it will communicate with the Committee of Fifteen; but its investigation will be wholly along lines which concern the physician as a practitioner.

Home for Scientific Alliance.—Plans have been drawn and a subscription of \$25,000 has been received for a building intended to house the allied scientific bodies included in the Scientific Alliance. The plans contemplate a building costing \$300,000 built upon a plot costing \$200,000. The building is intended to furnish facilities for original research and for the proper housing of the valuable libraries of the various societies which are now scattered. There will be an adequate lecture room and meeting rooms for the different bodies in the alliance.

Elmira Reformatory Superintendency.—There is a bitter fight on for the Superintendency of the Elmira Reformatory. Dr. Frank W. Robertson is at present Acting Superintendent. If Patrick J. McDonnell, at present Assistant Superintendent of the reformatory, has his way, however, Dr. Robertson will be ousted very soon. Mr. McDonnell, before he came to Elmira to accept a position at the reformatory, was head keeper of the Erie County Penitentiary. A short time after Mr. McDonnell arrived at the reformatory, Dr. Robertson, it is stated, became jealous of his assistant. The Assistant Superintendent is a man who has had quite a deal of experience in handling criminals, while Dr. Robertson was initiated into prison work at the Elmira Reformatory. Dr. Robertson, before he came to Elmira, was attached to Bellevue Hospital as a physician. Dr. Robertson's home is in Owego, also the home of Senator Thomas C. Platt. Dr.

Robertson is on friendly terms with Senator Platt, and it is owing to the Senator's influence that the Doctor was enabled to secure a position at the reformatory. As the story goes, Dr. Robertson's jealousy of Assistant Superintendent McDonnell grew daily. The Assistant Superintendent has his eye on the superintendency, and Dr. Robertson knows it. Both men have been pulling all the political wires in sight to accomplish their ends. Dr. Robertson has the backing of Senator Platt, but the Assistant Superintendent is said to be in favor with three of the Board of Managers of the reformatory.

New Smallpox Hospital.—The request of the Board of Health for authority to expend \$10,000 in the construction of a new hospital for contagious diseases on North Brother Island was taken up at a recent meeting of the Board of Aldermen and was defeated by a vote of 41 to 9, a vote of 45 in the affirmative being necessary to carry it through. All the Tammany men were in favor of the resolution, and Mr. McCall, the majority leader, said in a speech that unless there was relief at the contagious diseases hospital soon some of the patients would be obliged to sleep out of doors.

The Adulteration of Milk.—There are now pending before the courts in the various cities of the State, says the *New York Times*, a dozen or more cases brought to test the constitutionality of the provision of last year's law prohibiting the use of preservatives in milk. Among these cases is one against John S. Bieseker of New York City. This case was recently tried before the Appellate Division, and the law against the use of preservatives was declared unconstitutional. An appeal in this case has now been taken by the State to the Court of Appeals. Bieseker was represented by Herbert R. Limburger, who argued that if the law was sustained a man could not mix a milk punch without being guilty of a misdemeanor, since alcohol was a preservative of milk. Mr. Limburger's contentions being sustained by the court, other users of preservatives in milk, against whom actions have been brought in the name of the State, have engaged him to represent them.

The Bieseker case is one of much interest to the New York County Medical Society. Last fall this society took up the question of the use of preservatives in milk. The leading milk dealers of New York City were called into conference with the physicians. They all testified to the use of preservatives by the smaller dealers. Some of the preservatives used were chemically analyzed and were pronounced injurious to health. The opinion was advanced by some of the physicians who had given special attention to the subject that the infants of New York City were being poisoned by preserved milk, and that many cases of typhoid fever among the young and adults could be attributed to that source.

If the Court of Appeals sustains the decision of the Appellate Division in the Bieseker case, there probably cannot be new legislation to guard against the preservative evil until next year, which means that the poisoning of milk used by the poor in the big cities will continue during the coming summer.

Academy of Medicine.—"The Duty of the Public to the Medical Profession" was the topic under discussion at the regular meeting of the New York Academy of Medicine last Thursday. Incidentally the speakers also discussed the duties of the medical profession toward the public, and attempted to find the cause of what they considered the attitude of suspicion which the public always adopted toward any bill or reform measure advocated by the profession as a body. The question of how to bring about a change in this supposed public sentiment was gone into at some length by Dr. A. H. Smith, with whose ideas a majority of those present seemed to be in accord, to judge from the applause with which his remarks were received. "The science of medicine," he said, "is not in touch with the public at large because the profession has kept the public in ignorance of its work as much as possible." There is, of course, no such thing as a race of doctors, but they form a very close corporation, and every member of it shows what looks strangely like an instinctive desire to perpetuate the mystery which increased the dignity of the profession in days when it had little except mystery with which to command respect. They write extremely simple prescriptions in the fragments of a dead language intermixed with cabalistic signs, they resent lay criticism, and even lay description, of their work, and as much as they can they keep up the silly pretense that the opinions of followers of the same "school" never differ. Yet those of us who occasionally get hold of the medical journals and other literature of the profession have little difficulty in understanding what we read, and we look in vain for the big secrets which the doctors wear the air of concealing. They should forget the fact that their not very remote predecessors dabbled with what they imagined was the supernatural. Medicine is a great and noble art, and better men than the majority of its practitioners do not exist, but they have some antiquated ideas about professional ethics and dignity, and their belief that the modern public could not understand their work is a delusion. The modern public could not do that work, to be sure, but it has a perfect right to know as much about it as it chooses to learn, and the less mystery is made of it, the less will be the suspicion to which Dr. Smith referred.

Dr. A. Jacobi held similar views, and said that if the public could be made to understand that the medical profession was not a trades' union, or a trust, it would quickly respond in recognition of the profession's achievements.

All the speakers took occasion to denounce the Christian Scientists and the osteopaths and to propose various measures to prevent them from harming the public at large. In this connection Dr. D. B. St. John Rossa said: "I do not believe that that this struggle to pass new laws to bar out Christian Scientists and Osteopaths is necessary. If we should carry a case to the higher courts we would probably get a decision that they are practising medicine illegally under the present laws."

Dr. Rossa also advocated the passage of a law giving the medical profession a voice in all legislation affecting medical science and the public health. Dr. W. H. Thomson declared that the public, and not the doctor, should decide this question, because the physicians would be accused of selfish motives.

"The practice of calling 'healers,' he said, "especially in the case of contagious diseases, is more dangerous than letting children play with fire. Their whole doctrine is criminal. A law should be passed requiring a qualified physician to visit every case of sickness in order to decide whether the case was a contagious one. This physician should be a public official, so as to prevent all free advertising." Discussion of the formal topic, the public's duty to the medical profession, brought out statements that physicians were not in touch with the public because the public were kept too much in ignorance of the profession's work; lectures by practising physicians should be encouraged, not frowned on as advertising; there was too much "professional etiquette." The world should be kept informed of the progress of science. Dr. A. Jacobi was one sponsor for these views.

The other speakers were Drs. F. R. Sturgis and Robert F. Weir.

PHILADELPHIA.

Orator for Academy of Surgery.—Dr. Joseph M. Spellisy has been elected Orator of the Academy of Surgery for 1902.

Physical Culture in Public Schools.—Governor Stone has approved the measure enacted by the Legislature providing that systematic and regular instruction in physical culture be given in the elementary schools. This act is believed by many to be unconstitutional, but will probably soon be put in force in this city.

Dermatological Society Formed.—The Duh-ring Dermatological Society has lately been formed with Dr. H. W. Stelwagon as chairman. Monthly meetings are held at various hospitals for the purpose of discussing cases.

Endocarditis from Typhoid Fever.—Dr. J. A. Scott exhibited a patient at the Section on Medicine of the College of Physicians, April 8th. The young man had an undoubted attack of typhoid fever of a rather mild variety. During the attack, pain was noticed in the left chest, and a cardiac murmur was heard. This mur-

mur still persists and is made louder by exertion on the part of the patient. The diagnosis of endocarditis was made from the cardiac symptoms, leucocytosis (as high as 15,000 at one time and over 14,000 at other examinations), the pain, and the murmur which is still increasing. Drs. Tyson and Hare inclined to the opinion that the murmur was due to relative insufficiency instead of endocarditis. Drs. Eshner and Packard thought that the symptoms pointed to endocarditis.

CHICAGO.

Transfer of Dr. Holt.—Dr. John Milton Holt, Assistant Surgeon, U. S. M. H. S., in charge of the Marine Hospital of Cairo, Illinois, has been transferred to Chicago. He will be succeeded by Past-Assistant Surgeon James H. Oakley, who has been stationed at Queenstown, Ireland.

Definition, Pathology and Symptomatology of Epilepsy.—In a symposium on epilepsy at a meeting of the Chicago Medical and Neurological Societies, held April 3d, Dr. Elbert Wing discussed this subject. All writers practically accept the conditions of Gowers' definition of epilepsy, and it may be affirmed: (1) That impairment or loss of consciousness is the fundamental phenomenon in a paroxysm of epilepsy. (2) That convulsions of a purposeless type may or may not accompany the disturbance of consciousness. (3) These phenomena must not be due to active brain disease, blood states, reflex irritation or primary failure of heart's action; that is to say, it is possible to distinguish attacks of idiopathic epilepsy from attacks which closely simulate epilepsy, but which occur in connection with other diseases. Paroxysms of minor attacks or petit mal occur in two principal forms, with or without warning. In one there is only momentary arrest of consciousness with or without interruption of consciousness. The other form constitutes the varied phenomena of double consciousness, and between these extremes all variations occur. Reference to two types may suffice. Some believe no attack is free from some motor disturbance, *i.e.*, mimetic movements of facial muscles. Others claim that attacks of profuse sweating and unconsciousness are the only symptoms. The writer has one such case under observation. The relation of migraine to epilepsy is so often mentioned that it demands a passing reference. These diseases have in common neurotic heredity, periodicity, early beginning, and at times the same exciting causes. Many sufferers with migraine have become epileptics and both diseases may occur in the same person. In some cases of so-called ophthalmic migraine the symptoms closely resemble the auræ of epilepsy. Some such cases have been cured by bromides. Kraft-Ebing's statement is generally accepted, namely: "I do not know a single case in which simple migraine could be clinically related to epilepsy."

Diagnosis and Variations of Epilepsy.—

This phase of the subject was discussed by Dr. Harold N. Moyer. Epilepsy is easily identified when the convulsive attacks are typical. Unfortunately, the family physician often and the consultant almost invariably rely upon the descriptions of lay people for the sequence of events in the seizure. Epilepsy is a symptom-complex, but unlike chorea and other symptomatic disorders of the nervous system, any of the features which make up the attack may be absent in a particular case. The definition of epilepsy by Donath seems to be as satisfactory as any so far proposed. It is this: "An abnormal excitement of the cerebral cortex which increases suddenly, is periodical in its manifestations, has a typical course and disappears rapidly. Whether the attack occurs without unconsciousness and amnesia, depends upon the strength and extent of the irritation." The ordinary classifications of grand mal and petit mal are provisional only as they relate to the severity of the convulsions, the one shading into the other, but such a definition is useful. A lapse of consciousness is the most constant feature in an epileptic seizure, but it may be absent even in cases which are characterized by convulsions, though the latter is very rare. In petit mal the loss of consciousness is very slight, or may not occur at all. Jacksonian epilepsy is by no means clearly demarcated from other forms, but it is so commonly understood to mean those attacks which begin in a limited area of the cortex and extend by continuity. Sometimes the convulsions become general with a loss of consciousness, but more frequently they are only partial. The greatest difficulty in the diagnosis of epilepsy is the so-called equivalents, which are simply psychical states sometimes marked by automatic acts, alteration in the emotion or dream states. They may consist in alterations in the sensory perceptions, the so-called auræ. A very unfortunate combination of words is that known as hystero-epilepsy. These cases are hysteria and not epilepsy. They are distinguished from true epileptic attacks by the absence of an initial cry, the movements are at least coordinate if they do not have a purposive character, the tongue is not bitten, the patients do not injure themselves. The duration of each convulsion is several hours with frequent remissions. Consciousness is generally preserved. Emphasis was laid upon the importance of the early recognition of epilepsy.

Mental and Allied States.—Dr. Sanger Brown said that suddenness and violence of phenomena in epilepsy are suggestive of chemical reaction. Therapeutic measures founded upon the theory that the disease is due to an excess or diminution of this or that organic substance in the economy have been disappointing. Heredity may be divided into similar and dissimilar. Similar heredity implies the existence of epilepsy in ascendants, while dissimilar heredity refers to such ancestral diseases as insanity and imbecility. That the disease is due largely to an inherited defect of the nerve ele-

ments, rendering them unduly stable, and conformably to the fact that a majority of all hereditary cases begin during the same period, would be expected when the instability of the nervous system during childhood, youth and adolescence is remembered. The author's experience does not either confirm or contradict the statement that cases of hereditary epilepsy are more amenable to treatment than those devoid of that feature.

The psychic or mental manifestations were divided into those momentarily preceding or terminating in other phenomena, or those extending over a period ranging from a few minutes to a few days prior to the seizure or seizures, those which alone comprise the individual attack and those which are the result of the fits either momentarily or remotely, and finally, a class of cases in which the mental disease or disorder is of such a nature that it might be more properly regarded as an association with, rather than an expression of, epilepsy. Of the first class, the most common are those which momentarily precede the fit, and fairly constitute the mental or psychic aura. To mention these in the order of their frequency, those cases come first in which a familiar environment seems strange, and next those in which the surroundings seem a repetition or at least peculiarly familiar. There is a vivid mental perception of detail, sometimes analogous to the visual impression made by a lightning flash in dense darkness. Vague fear, but perhaps intense; a depressing sense of confusion; a consciousness of absurd or trivial mental contents; anger; revenge; joy amounting sometimes almost to a mental or psychic orgasm; a vivid recollection, sometimes quite elaborate. Those changes which precede the seizure for a variable period are properly regarded as premonitions. They commonly consist of marked irritability, depression, violent explosions of temper, indecency, untruthfulness, or a sense of mental exhilaration and joyousness rapidly progressing to maniacal confusion and frenzy. Doubtless, transitory frenzy might constitute a valid defense for homicide. Indeed, a defense of this kind would be very strong if the defendant were known to suffer from epilepsy, whether the frenzy had been previously known to be intimately related to the fits in point of time or not.

The Treatment of Epilepsy.—Dr. Daniel R. Brower spoke on this subject. The prophylaxis of epilepsy demands much more attention than it ordinarily receives. The prophylaxis of post-traumatic epilepsy requires the prompt and judicious treatment of every head injury. The speaker discussed the prevention of individual seizures, treatment during an attack, and the care and treatment between the seizures. Hydrotherapy is an important aid to treatment. A vigorously active skin means a more perfect elimination of toxins. A tepid bath with an abundance of soap is ordered twice a week, temperature 125° F., and a cold douche of an aver-

age temperature of 75° daily, to be followed by vigorous friction. Cerebral galvanization is of value. Large electrodes should be used, and a current strength of from one to three milliamperes, and daily if possible. Two steps in this cerebral galvanization are, first, the current is passed longitudinally, the positive over the forehead, and the negative over the nucha; and, second, from temple to temple; the séance should last about ten minutes. Some form of gymnastics should be ordered for the great majority of cases. The bromides still hold the first rank in the treatment. They must be used with proper precautions, and bromism avoided. They must be used for a long time. No case can be called cured until the seizures have been stopped for at least five years. Their curvative action requires the production of their full physiological action, but not their toxic. He rarely exceeds one dram (4.00) a day, and is of the opinion that one dram and a half (6.00) should not be exceeded in any case. A serious objection on the part of some patients to the use of the bromides is the acne which it produces, a result that depends less upon the dose than upon the idiosyncrasy of the patient. Taking the mixture with a very large amount of alkalized water diminishes the amount of it, as does also the addition of liquor sodii arsenatis in from three to five minims (0.20 to 0.30) to each dose. The arsenic by its alterative and tonic qualities aids the cure. In ordinary cases the iodide of sodium should be given in doses of five grains (0.30) three times a day in the bromide mixture. In the syphilitic cases it should be given in the largest dose that is possible. When the moderate doses of the bromides fail to stop the seizures, he advises a dose of grs. x to grs. xx of chloral at bedtime, often with benefit. Acetanilid is synergistic to the bromides, and when administered in grs. 2 to 5, three times a day, will sometimes be of service. The opium-bromide treatment has not been satisfactory in his hands. Glonoin and the nitrite of sodium are valuable remedies against the petit mal attacks, when given in conjunction with the bromides. The best intestinal antiseptics are salol, salicylate of bismuth and guaiacol carbonate. As to tonics, strychnine, arsenic, the hypophosphites, phosphoric acid and iron are at all times of service. He gives iron, preferably the bromide, in gr. ½ dose, three times a day, whenever the hemoglobinometer indicates it, and then it is of great value. The results that have followed cervical sympathectomy, oophorectomy, ligating the vertebral arteries, and the carotid arteries, have not been such as to justify advising them. If epilepsy is essentially a disease of the cell bodies, of cortical neurons, and a proliferation of the neuroglia, then all such operations are unscientific.

The colony system is the highest ideal for the treatment of these unfortunates. The proof of this is overwhelming in results obtained both at home and abroad.

GENERAL.

St. Louis Medical Society.—The subject of Urinary Fistula was discussed at the last regular meeting of this society, held Saturday, April 6th. Dr. Bryson read the paper; Drs. J. G. Holland and C. O. C. Max were recommended to fellowship.

Transportation to the American Medical Association.—The Western Passenger Association has granted reduced rates throughout its territory to members attending the American Medical Association. From all points more than 200 miles from St. Paul the price will be that of a single fare plus \$2.00. All communications will be answered by the MEDICAL NEWS and by addressing H. C. Johnson, M.D., Chairman of Committee on Transportation. Readers of the MEDICAL NEWS who desire to know the rates, routes, etc., will please communicate with editor who has full information.

Medical Society of the State of North Carolina.—This society will meet in Durham, May 21st, 22d and 23d, under the Presidency of Dr. Julian M. Baker of Tarboro. The oration will be delivered by Dr. Earle Grady of Tryon; the essayist is Dr. R. S. Primrose of Newbern. The annual debate will be opened by Dr. D. A. Stanton of High Point. Dr. A. G. Carr of Durham is Chairman of the Committee of Arrangements.

Study of Epilepsy.—The first annual meeting of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics will be held in Washington, D. C., May 14 and 15, 1901. Many papers of value from European and American students and full reports of the progress that is being made in the care and treatment of epileptics in this country, are promised for this evening. The President of the Association is Hon. Wm. P. Letchworth, LL.D., Portage, N. Y.; First Vice-President, Frederick Peterson, M.D., New York City; Secretary, Wm. P. Spratling, M.D., Craig Colony, Sonyea, N. Y. Drs. Peterson and Spratling, upon request, will give further information of the coming meeting.

New Orleans Polyclinic.—On account of various requests the session of the Polyclinic will be continued to May 31st, instead of May 11th, as announced in catalogue.

Gift to Liverpool School of Topical Medicine.—According to *Science*, the father and uncle of Dr. Walter Myers, whose death from yellow fever was announced some time past in the MEDICAL NEWS, have given \$7,500 to the Liverpool School for the purposes of original investigation.

Women Doctors in South Carolina.—For the first time in the history of the medical profession of this State two young women have been graduated as practising physicians from the Medical College of South Carolina. At the commencement exercises, April 3d, diplo-

mas were awarded to Miss Emilie M. Vielt and Miss Rosa Hirschman of Charleston. They are the first graduates of the institution.

Suspected Plague Case at Ann Arbor.—The case reported to be bubonic plague, which was discovered at the University of Michigan, is under treatment in the college pesthouse, which is isolated, and the authorities declare that there is no possibility of a spread of the disease. The patient is a student in the medical department, and became infected, it is alleged, while studying plague germs in bacteriological work. The case was at first diagnosed as pleurisy, but later developments led to the summoning of Dr. Novy, who says:

"I have made cultures from the young man's blood. I shall inoculate guinea-pigs and can tell from the results whether it is really 'black death.' One thing makes the case look favorable. A burning fever accompanies bubonic plague. The young man has very little fever."

Women Medical Students.—Dean Victor C. Vaughan of the University of Michigan Medical School has set his seal of disapproval on the work of women in the department of medicine. The dean's remarks were made before the members of his class in hygiene: "Woman's Lack of Originality" formed the theme for the professor's discussion. "Once a year," said Dr. Vaughan, "I like to tell my opinion of women engaged in the study of medicine. In text-book work generally a woman student will make a better recitation than a man, but when it comes to relying on personal judgment she nearly always fails in efficiency. There are brilliant exceptions to the rule, but when a young woman is thrown on her own resources in a laboratory she fails to come up to the standard set by the students of the opposite sex."

Physician Not Bound to Answer Calls.—The Supreme Court of Indiana decided April 4th that a licensed practising physician is not legally bound to attend any patient for whom he is called, although he may have served as family physician for the sick person's family in the past, and he is not liable for damages for refusing to answer calls. The case came up from Montgomery County, where Dr. George Weddingfield refused to attend the wife of George D. Hurley, although called on three times, the last time by a preacher, who offered to pay the fees in advance. It was charged that the woman's death was due to the lack of a physician's aid, and the doctor was sued for \$10,000 damages.

Christian Scientists in Minnesota.—A decision of the Supreme Court of Minnesota maintains that Christian Science healers are not practising medicine while engaged in their calling and hence are not amenable to the medical regulations.

To Aid the Older Physician.—In the recent annual report of the Connecticut State Board

of Health the suggestion is made that some modification of the Registration Act of the State be made so as not to exclude old and skilled physicians not technically up in the minute points required in the examinations. On this matter the report says: "If present conditions continue the profession in this State will be almost a close corporation, limited to those who join it while they are fresh from their college work, and their memory is still retentive of chemical formulæ and of minute points in anatomy and physiology."

Connecticut Death-Rate.—The death-rate for the State during the year 1900 was 17.9 per 1,000. In ten years, notwithstanding the fuller returns of deaths, the rate has fallen from 19.2 per 1,000 to 17.9 per 1,000. The divorce laws appear to be better enforced in the State, as, in spite of increase in population, divorces have fallen from 477 to 431 during ten years. On the other hand, births, in spite of fuller returns and increase of population, have been almost stationary for eight years, there being 20,395 in 1900, as compared with 20,296 in 1893.

Connecticut Sanitary Science.—The annual report of the State Board of Health, one of the most carefully prepared of the State reports, was published this week. After noting the improvement in sanitary administration in the State during the last few years, the report calls attention to the rapid increase in pneumonia. That disease has now outstripped consumption in mortality, and, out of 16,263 deaths from all causes in Connecticut during 1900, there were 1,631 victims of pneumonia, as compared with 1,476 from consumption and 1,341 from heart disease. During the decade from 1890 to 1899, inclusive, the average annual mortality from pneumonia has been 1,296, as compared with an annual average mortality of 776 during the thirteen years previous. The disease is, the report says, in close accord with the development of late years of influenza and la grippe. The tables indicate that consumption is slowly dying out.

Typhoid in Connecticut.—Some remarkable figures are given in the last annual report to show the large mortality from typhoid fever in private practice as compared with hospital treatment in 1900. Returns from six hospitals with 693 typhoid-fever patients show a mortality of but 6.8 per cent., while 1,163 cases in the whole State showed a mortality of 20 per cent. An official report of the Forestville epidemic of typhoid fever resulting in 50 cases and 7 deaths is given, showing clearly that the disease originated from river water contaminated by human excreta from a factory, the water being pumped into the regular Forestville supply owing to a break of a pipe where it crossed the stream.

Appointments by the State Health Commissioner.—Dr. Daniel Lewis, State Commis-

sioner of Health, April 8th announced the following reappointments of employees in the State Health Department: Dr. F. C. Curtis of Albany, medical expert; F. D. Beagle of Oneida county, registrar of vital statistics.

Hospitals Benefited.—By the will of the widow of Senator John McPherson of New Jersey, on the death of her daughter, \$10,000 is to be given to the Emergency Hospital in Washington and \$50,000 to Christ Hospital, Jersey City.

Christian Science Invading Germany.—The *Deutsche Evangelische Kirchen Zeitung*, a leading Protestant organ in Germany, bitterly complains that of late "the so-called Christian Science has been imported from America, and is now being spread by Americans residing in Germany, particularly in Berlin." The paper declares that the movement is making rapid progress among the higher, and even the highest, classes, although exclusively among ladies thus far. It characterizes the belief of Christian Scientists as "superstition," and their practices as "methods for wringing money from the unwary." The article, which is now making the rounds of the press, has created a sensation.

Insanity Not on the Increase.—The State Board of Insanity in Massachusetts agrees with that of Indiana in the belief that much of the apparent disproportionate increase in the number of insane in public institutions is due to the marked and growing tendency to commit all classes of the insane to institutions, especially in the case of old people, of the feeble-minded, and of criminals. It is an increase of registered, but not of occurring, insanity, the rate of increase in the latter being asserted to be much less than the apparent increase of the insane. Nevertheless, the annual increase in the number of insane in Massachusetts is about 300, and the provisions for their accommodation are inadequate. Of the 7,417 patients in public hospitals and asylums on October 1st last, something over 13 per cent. were sleeping on cot beds made up each night in the corridors and the day rooms. This, of course, was detrimental to the health of the patients. In addition to the annual increase, the State is to assume the care, after 1903, of all the insane in city and town almshouses. These now number about 900. In Connecticut, too, the number of insane is in excess of the public accommodations. There are 2,135 patients in the asylum at Middletown, which is 500 more than there is room for, and the number is being added to at the rate of 100 a year. The building is crowded with humanity like cattle in a pen, a legislative committee reports, and in a garret they found 100 men packed in where there was room for but twenty. The presentation of these facts hastened the appropriation by the Legislature of \$165,000 to increase the accommodations.

Rudolf Virchow Fund.—The American medical profession is asked to notice that on October 13, 1901, Dr. Rudolf Virchow will be

eighty years old. When he completed his seventieth year a fund was started in his honor to enable the great master to facilitate scientific research by establishing scholarships, and by encouraging special medical and biological studies. Contributions to that "Rudolf Virchow Fund" were furnished by those in all countries interested in progressive medicine, as a homage to the man whose name is always certain to arouse admiration and enthusiasm. In Berlin a large committee, containing amongst others the names of A. Bastian, Von Coler, A. Eulenburg, B. Fraenkel, O. Israel, Fr. Koenig, C. Posner and W. Waldeyer, has been formed to call for contributions which are to be added to the original "Rudolf Virchow Fund" so as to increase its efficiency. The Committee expresses the opinion that in no better way, and in none more agreeable to the great leader of modern medicine, can his eightieth birthday be celebrated, and asks for the sympathy and cooperation of all those engaged in the study and practice of scientific medicine all over the globe. The undersigned have formed a subcommittee for the purpose of making the American profession acquainted with the intentions of the Berlin Committee, and urge their colleagues to participate in honoring the very man who has done more, these fifty years, than any other to make medicine a science and international. Subscriptions should be sent to the secretary, who will receipt therefor.

CHARLES A. L. REED, President of the American Medical Association.

HENRY P. BOWDITCH, President of the Congress of American Physicians and Surgeons.

WILLIAM K. WELCH, Johns Hopkins University.

ROBERT F. WEIR, President of the New York Academy of Medicine.

A. JACOBI, 110 West 34th Street, New York, Secretary.

New Haven's Typhoid.—It was said that on April 6th there had been 125 cases of typhoid fever in this city and that the disease has reached epidemic proportions. Never in the history of the Board of Health of New Haven have there been so many cases at one time here. The record prior to this was made in 1897, when there were sixty-three cases, many of them proving fatal. Two weeks ago the city was practically free from the disease. In the western part of the city there started half a dozen cases at once and since then the new cases have been reported at the rate of six a day. A special typhoid ward was fitted up at the New Haven Hospital last night with a corps of three nurses and one orderly. Sixteen patients have already been taken there for treatment. One of them is N. N. Berg, a student of Yale. Another Yale student who is ill is J. Frank Flynn, but he has been taken to his home in Meriden. There are two Yale men in the Yale infirmary with the disease. The health officials have said that they have traced the origin of the disease to Dawson Lake, a feeder to the New Haven Water

Company which supplies the city. Near a brook leading into Dawson Lake resided a family that last winter had three cases of typhoid fever. Typhoid organisms have found their way into the brook and went to the lake and have since been running through the water pipes of New Haven. Later reports show that there have been officially reported 186 cases altogether. There have been thus far no deaths. An expert from Lehigh University, who has examined the cases, says that they are of a malarial character, but both the local and State health officers pronounce them genuine typhoid.

Obituary.—John H. Grove, M.D., LL.D., a well-known surgeon of Philadelphia, who was brevetted Lieutenant Colonel for distinguished services in Union military hospitals during the Civil War, died last week. For many years he was medical director of St. Agnes' and St. Mary's Hospitals in Philadelphia. In 1899 he presented a memorial chapel to the Presbyterian Church in Marietta, Pa. He was born in 1825 in Maytown, Pa. He was a fellow of the College of Physicians, a member of the Society of Medical Surgeons and a Mason of high degree.

Dr. Thomas A. Hill, formerly of Chicago, but since 1894 a resident of New York, died of apoplexy April 5th in his eighty-fourth year, at Danville, Ill.

CORRESPONDENCE.

OUR LONDON LETTER.

[From Our Special Correspondent.]

LONDON, April 1, 1901.

THE KING'S PHYSICIANS, SURGEONS, APOTHECARIES AND DENTISTS—THE KING'S HEALTH NOT AS GOOD AS IT MIGHT BE—THE COURT DOCTORS AND THEIR CHARACTERISTICS—PHYSICIANS ORDINARY AND EXTRAORDINARY.

THE *London Gazette*, which is the official organ of the Court, in its issue of March 29th contains the names of the physicians, surgeons, apothecaries, dentists, etc., who have been chosen to minister medically to the person of King Edward VII. The list comprises thirty-three names, so that, if it be true there is safety in a multitude of counselors, it ought to be many years before our Gracious Sovereign adds the title of "Late" to the many and manifold designations in which he already rejoices. Your readers doubtless remember the story of the courtier who, in speaking to Louis XVI., referred to "*Sa Majesté le feu Roi d'Espagne*," and how the *Grand Monarque* was shocked at the expression till it was explained to him that "*c'est un titre qu'ils prennent*." Were it not that the text quoted above might be interpreted as meaning that the safety was for the counselors rather than for the counseled, it might be thought that the complaint most

likely to create a vacancy in the British throne was a "complication of doctors"—a development of pathological science of which the credit belongs to an American jury.

But if Edward VII. could probably dispense with many of his doctors, it is pretty certain that he will need a good deal of doctoring. His life is, from the insurance point of view, by no means a good one. The real reason why his broken kneecap was not wired two or three years ago was simply that the surgeons thought the operation too risky in view of the constitutional condition of the patient. He is much inclined to obesity, and though he has suffered much on this score from more than one physician, the royal form is still such as might make applicable to Edward VII. Beau Brummel's unkind remark spoken at George IV., "Who's your fat friend?" Then his water is not, as Falstaff's doctor said of his illustrious patient, "in itself a good water," for it contains, or at any rate did recently contain, albumen and sugar. Withal His Majesty, like his mother, is a great eater, and nowadays takes little exercise.

It would be tedious to inflict on you the full list of the new Court doctors. The physicians in ordinary are Sir William Broadbent, Sir James Reid and Sir Francis Laking. The only one of these who counts for anything in the eyes of the profession is Sir William Broadbent who has done some good work, notably in the domain of heart disease. He is an eminently sensible man, of much shrewdness but little brilliancy. He may be described as a glorified family physician. He steadfastly labors in his vocation in the spirit of Iago's advice to Roderigo "Put money in thy purse." This he does in all honesty and without the aid of questionable methods, the impolicy of which he is astute enough to perceive. He has an immense *clientèle* among financial leaders in Israel, and was at one time the trusted adviser of the Prime Minister. Some disagreement with Lady Salisbury in her last illness, however, lost him the favor of her lord, and his political influence which was supposed to be considerable suffered obscuration. It should be explained that the political influence of a physician in high places here is exerted mainly in procuring titular distinctions for his friends and the patronage of his exalted patients for schemes and institutions in which he is interested. It is only fair to add that Sir William is a man of marked independence of character with a high sense of professional dignity.

Of Sir James Reid enough was said in my last letter. His appointment is doubtless nothing more than a graceful recognition of his long and faithful guardianship of the late Queen. Sir Francis Laking has for many years been Apothecary, that is family doctor, to the royal household. His connection with the Court has hitherto been rather by way of the backstairs. But with the new King he is a

persona grata, and his professional respectability is beyond challenge.

In addition to the Physicians in Ordinary, there are Physicians Extraordinary. To this nominal dignity have been appointed Sir Joseph Fayrer, Sir Richard Douglas Powell, Sir Edward H. Sieveking, Sir Felix Semon, and Dr. John Lowe. Sir Joseph is well over eighty and lives in retirement. He won a great name for himself in India, and during the famous siege of Delhi in the Mutiny, his house was one of the chief strongholds of the garrison. He accompanied the King, then Prince of Wales, in his progress through India. For many years he was Medical Adviser to the Indian Office here, and he has beguiled the tedium of an enforced leisure by literary production, the most interesting of his writings being an autobiography which, as far as it relates to his Indian career, is a historical document of considerable importance. Sir R. Douglas Powell is in appearance and manner and, it may be added, in his somewhat unctuous rectitude, of professional conduct the very type of the dignified physician. To him, it is said, was due the extraordinarily periphrastic phraseology in the bulletins about the late Queen, which were classic examples of the use of language to conceal thought. Sir Edward Sieveking has been off the active list for some years. Except titularly, he has never had anything to do with the Court. He had a great disappointment in his professional life, for when the Prince of Wales was struck down by typhoid fever in 1871, Sieveking was sent for in the first instance to assist Jenner. He was out of the way, however, and the late Sir William Gull was invited to go as a temporary substitute. But Gull once at the bedside of the royal sufferer refused to leave it. Like Marshal Macmahon in the Sedan, he said "*J'y suis, j'y reste*." Sir Felix Semon is a German Jew with the vertebral flexibility and insinuating perseverance which are the badge of his tribe. When he first came to this country, he attached himself to Morell MacKenzie. As soon as he could afford to be independent he prudently made friends to himself of a more respectable kind of professional Mammon, and he has had his reward. He advised Gladstone when the great orator's voice was beginning to fail, but his counsel was not sought in the Grand Old Man's last illness. Sir Felix Semon is a man of real talent, but he does not need to pray with the Scotch minister of the story that "God may give him a guid conceit o' himself." Dr. John Lowe is a general practitioner of Sandringham in Norfolk where the King lives the life of an English country gentleman, and was in attendance when His Majesty had typhoid fever.

Appearance of American Medicine.—Dr. George M. Gould's new enterprise, *American Medicine*, has just appeared. We wish it success.

TRANSACTIONS OF FOREIGN SOCIETIES.

French.

TREATMENT OF CANCER—PUERPERAL SEPTICEMIA
—LARGE-INTESTINE HERNIAS—CANCER OF THE
RECTUM—STERILIZATION OF COCAINE SOLU-
TIONS.

LAUNOIS, at the Société de Chirurgie de Paris, February 20, 1901, discoursing on the treatment of cancer, reported the very promising results following subcutaneous injections of a soluble salt of quinine after the method of Jaboulay, in an inoperable case of cancer of the uterus. The symptoms were accentuated paresis of the lower extremities with considerable pain and functional derangements. Under the influence of subcutaneous injections of chlorohydrate of quinine, repeatedly exhibited, these phenomena disappeared and the ulceration of the neoplasm itself ameliorated to a marked degree. Tuffier, in the discussion, said that he has found the cacodylate of soda equally as efficient as the quinine salt recommended by Jaboulay. A large mammary cancer with extensive ulcerations had materially changed for the better under its exhibition hypodermatically, frequently repeated. Bazy emphasized the peculiarity of cancer to undergo occasional arrest or amelioration independently of all treatment. He had removed a large cancer of the breast associated with paraplegia and gibbosity. Both disappeared spontaneously after the operation. Felizet suggested the interest inherent in an attempt to prevent recurrence by resorting to these injections during the after-treatment following an operation. If the method of Jaboulay and Launois is efficacious, this would probably also avail greatly. Berger said he has frequently used the serum of Wlaiev and noted occasional marked improvement in the symptoms, especially the functional and pain signs, but as to the growth itself as a pathological process he has unfortunately not seen any change. In fact he felt that we are not on the point of finding any real cure for cancer. Nimier said he had lately seen not the slightest improvement in a lingual cancer or in its metastatic deposits in the glands of the neck, following the use of Wlaiev's serum.

ROCHARD, at the meeting, February 27, 1901, discussed surgical intervention in puerperal septicemia and reported five such cases with five deaths, following the operation. In one case there were multiple purulent foci which he evacuated and otherwise cleaned out the pelvis, but the patient died right after the operation. In three of the remaining cases abdominal hysterectomy was done; in the last vaginal hysterectomy was done. He feels that death was not due to surgical treatment, but to the delay in its application. The indication is removal of the uterus as the main focus, but such removal must be done very early. As to

the avenue for the removal, he felt that the abdominal route is the better, because it gives a wider view of the lesions. The friability of the infected postpartum uterus constitutes a serious obstacle to its extirpation by the vagina, practically a contra-indication.

SCHWARTZ in reviewing the clinical features of hernia of the large intestine named two varieties; one in which reduction was easy because the sliding condition of the bowel and its partial peritoneal covering was still maintained, and the other in which adhesions prevented liberation and reduction. The technic of dealing operatively with the former has already been enunciated by him and is comparatively simple. In the latter in a recent example he resected *in toto* all the adherent bowel, but that did not prevent the patient from dying.

BERGER stated that four or five years ago with the aid of Quénu he removed the whole of the rectum and part of the sigmoid colon by the perineo-abdominal route for cancer. Within a few days he had again seen the patient and found him in a most satisfactory condition. No sign of recurrence and the artificial anus operating well. Although the lesion was shown to be chronic inflammatory and not cancerous in character, nevertheless the good condition of the patient was attributable to the operation. By the perineal route in an old woman he has recently removed fourteen centimeters of the rectum which covered twelve centimeters of its extent. As a preliminary step he made an artificial anus by the intramuscular method and found that, after a few days of trouble, owing to the contraction of the muscles checking the outflow of feces, it made an admirable anus. After freeing the bowel he shortened the technic by placing an elastic ligature about the bowel which came away, leaving the stump healthy and in apposition with the external wound, after about twelve days. As another preliminary to this operation he commends the taking away of the coccyx because it exposes the perirectal fat and leads directly to the levatores and their associated planes of fascia, thus facilitating easy enucleation of the bowel from its bed.

RECLUS, in discussing the various means of rendering cocaine solutions sterile, said that the simplest is that of Hérissé, who, in 1898, found that the rotatory power of cocaine is not lost by boiling. The speaker's own experience was that the anesthetic qualities of the drug are also not affected by boiling any more than by heating in the autoclave to 115° to 120° C. He had recently used a solution three months old which had been raised to 120° C. in the autoclave and found its anesthetic powers perfect.

Fresh Air Home for Nurses.—Mrs. Walter B. James has recently purchased a place at Far Rockaway for a fresh-air home for trained nurses.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE—SECTION
ON PEDIATRICS.*Stated Meeting, Held March 14, 1901.*

William L. Stowell, M.D., Chairman.

Congenital Heart Disease.—Dr. A. Bassler presented a patient suffering from an interesting form of congenital heart affection. The patient is a girl of about six years of age who has constantly had some symptoms pointing to the existence of a heart lesion. Loud murmurs can be heard all over the chest and in the back at the angle of the scapula. A heart beat can be felt on both sides of the chest. While the heart has labored a good deal, there has never been much cyanosis and the child is in reasonably good general health. The lesion seemed to be one of pulmonary stenosis.

Dr. C. G. Kerley said that it is an extremely difficult matter to make an exact localizing diagnosis of a congenital heart lesion. There are many possibilities in the matter of malformation and too little is known about the physical signs that these various anomalous conditions produce to enable the making of a definite diagnosis. The symptoms must be met as they arise, as far as is possible, and the best diagnosis is one that does not assume too exact knowledge of the actual condition present.

Not Uncomplicated Pulmonary Stenosis.—Dr. Libman said that the dulness above the region of normal heart dulness in the first and second interspace in this case seemed to point to the existence of a patent ductus arteriosus. There is no accentuation of the second sound over the pulmonary valves. There seems good reason then to think that the case is not one of uncomplicated pulmonary stenosis. There is another reason for thinking that the case is not merely pulmonary stenosis. This is the presence of a secondary area of pulsation on the right side of the child's chest. This rather than the pulsation on the left side seems to be the true apex beat.

Dr. J. Finley Bell of East Hampton read a paper on *Interesting Experiences in an Epidemic of Typhoid Fever, Fetal and Infantile Typhoid and Scarlatina Complicating Typhoid Fever and Vice Versa*. This paper will appear in a future issue of the *MEDICAL NEWS*.

Pathology of Typhoid Fever.—Dr. Martha Wollenstein read a paper on the recent advances in the bacteriology and pathology of typhoid fever. Aberth and Koch described bacilli which occurred in the stools of typhoid patients. Gaffky, however, was the first to have them grow in pure culture. Typhoid bacilli may remain latent in the system for many years and yet retain all their virulence. They have recently been discovered in pure culture in the pus of osteomyelitis, occurring in patients who had had typhoid fever many

years before. The best explanation of their presence and their causative action in the osteomyelitis has been recently given as follows. Somehow the typhoid bacilli found their way to the bone marrow. Deposited there they remained absolutely inactive, although living so long as the individual retains the acquired immunity to typhoid fever, which is the result of the previous attack. After the immunity has run out, either as the result of some injury lowering tissue vitality, or even spontaneously, the typhoid bacilli regain their virulence and osteomyelitis is developed.

Life Outside the Body.—Typhoid bacilli readily take up a saprophytic existence. They live most frequently in water, may exist there for several weeks and usually multiply very plentifully. A favorite culture medium for the bacillus is milk. Hence the number of epidemics that take place through this medium. Milk may be infected by hands that have come in contact with typhoid fever discharges, or by being placed in vessels washed with infected water. Other sources of infection are not wanting. Typhoid bacilli cling to particles of dust and may settle on milk, or they may be carried to it on the feet or wings of flies. Dr. L. Emmett Holt has shown that they may exist in ice cream.

Other Modes of Contagion.—Typhoid fever may be carried in the air but not for long distances. In a badly-ventilated ward it may travel from bed to bed, even when great care is exercised. As a general rule, however, typhoid bacilli resist drying very poorly and are always killed by complete drying. This preserves the air from serious contamination. Typhoid fever has been conveyed through the rectum by means of enema tubes. Clothing worn by typhoid-fever patients has been known to convey the disease. Monti and others say that typhoid fever may be conveyed by a sick nursing mother. It is certain that the bacillus of typhoid fever can pass through the placenta from mother to child. Twenty-five per cent. of all typhoid patients' urine contains typhoid bacilli and this excretion requires as careful disinfection as the stools. Typhoid bacilli have been found in the sputum. The bacillus has been cultivated from the blood taken from rose spots. The bacilli are found very rarely in throat secretions. They occur very often, however, in the bone marrow. Quincke after carefully investigating this subject found that they occur as often in the bone marrow as in the spleen.

Lesions of Typhoid Fever.—Lesions of the disease are usually in the gastro-intestinal tract. It must not be forgotten, however, that typhoid fever may run its course without any lesions in the intestinal tract and with the occurrence of lesions only in the lungs. In these cases it would seem that the infection has been conveyed through the air.

Typhoid Bacilli Pyogenic.—There is no doubt that typhoid bacilli alone may cause the production of pus. They have been found in pure culture in osteomyelitis. In one case the osteomyelitis occurred in the sternum of a child. Typhoid bacilli have been found as the sole cause of an abscess of the kidney. They undoubtedly cause abscesses of the parotid gland. Suppurative meningitis has also been traced to their activity. In certain cases typhoid septicemia sets in. This is usually fatal. The infection that causes septicemia usually comes through the blood. Bacteriological examination is the only diagnostic method by which a typhoid septicemia can be diagnosed from septicemia due to other pyogenic micro-organisms.

Special Pathology of Infantile Typhoid.—The basic pathological process in typhoid fever in children is hyperplastic, rather than necrotic. Peyer's patches are enlarged and swollen, rather than necrosed. This distinction between adult and infantile typhoid has been pointed out by both Baginsky and Monti and has been confirmed by other observers. The dictum that the younger the child the less the number and extent of the intestinal lesions of typhoid is one that admits of many exceptions. It is true that characteristically children's intestines suffer much less than do those of adults, but in some cases of weakling children the intestinal lesions are very extensive and deep.

The Blood in Typhoid.—The red blood-cells diminish progressively during the course of typhoid fever until convalescence becomes established. There are certain variations in the blood-count that from time to time seem to indicate the presence of a larger number of red blood-cells than before. The rise in the average number of red blood-cells occurs just after severe diarrhea or febrile sweating. It is evident that the increase of red blood-cells is only apparent and is really due to the presence of less serum in the circulation than before. Severe hemorrhage lessens the number of red blood-cells directly and adds very markedly to the anemia. The number of white cells is lessened, but only relatively to the number of reds. The presence of inflammatory complications causes a leucocytosis. The occurrence of leucocytosis then should arouse suspicion of the development of some complication.

Value of Widal Reaction.—Dr. John Lovett Morse of Boston discussed the value of the Widal reaction with special reference to its usefulness in the typhoid fever of children. There are three factors that are important for the value of Widal's test. These are, first, the dilution at which the agglutination takes place; secondly, the length of time necessary for its production; and thirdly, the completeness of the clumping of the bacilli. Dr. Cabot of Boston uses a dilution of one to ten for

the performance of the test and considers that the agglutination, to have a diagnostic value, should take place within half an hour. The Boston City Board of Health employs a dilution of one to twenty, but allows an hour for the complete reaction to take place. Abroad there is a tendency to employ high dilutions and to allow a long time for the completion of the reaction. In this country a tendency in the opposite direction has been noted.

Widal Experience in Boston.—Dr. Witherington of Boston reports on Widal's test in 253 cases which clinically were typhoid fever. In ten, 4 per cent., the characteristic reaction failed to occur. In all of these the later symptoms and the clinical course showed that the disease was typhoid. In addition to mistakes in diagnosis there are certain reasons, now well recognized, for the failure of the Widal test. In a certain number of cases the power to cause agglutination of the bacilli is present in the blood only intermittently. Examinations at certain times therefore will fail for this reason. In other cases the Widal reaction is never present during typhoid fever at all, although the cases are true typhoid and may prove fatal and show the characteristic lesions at autopsy. Widal himself has reported a case in which the reaction was absent and yet typhoid fever bacilli were obtained from the skin. The reason for the absence of the test is not known in certain cases and it constitutes a small, but a real possibility of error that prevents the test from being absolutely diagnostic.

Duration of Agglutination.—In some cases the power to cause agglutination remains in the blood as long as ten years after recovery. In about 70 to 75 per cent. of the cases, however, it disappears under five years. This constitutes another source of error for the Widal test. It would seem that in certain cases, notwithstanding the persistence of the power of agglutination, reinfection may occur. In 365 cases of patients not suffering from typhoid fever and with no history of typhoid fever, Cabot found the Widal reaction once. The source of error from this source, therefore, is probably very small.

Occurrence of Widal.—The Widal reaction is present in over 95 per cent. of all cases of typhoid fever. It is seldom present before the second week of the disease. As to its absolute diagnostic value, it seems as near certain as anything can be, that the case is not typhoid if the Widal reaction is absent, after a reasonable length of time, with a dilution of one to fifty.

Widal Test in Children.—It has usually been presumed that the Widal test is the same for children as for adults. The subject has not been very much discussed, however. Examination of recent statistics shows that the agglutinating power is weaker in children, that it appears earlier in the disease and

persists for a shorter time than in adults. The test is of special value in differentiating gastro-intestinal diseases, running their course with fever. The drop in the reported number of hospital cases of typhoid fever in children in recent years, is undoubtedly due to the more general use of the Widal test. On the other hand the use of the Widal test enables the physician to make a positive diagnosis of typhoid fever in many mild cases in which the presence of the disease was scarcely suspected. The Widal reaction in infants takes place much as in older children, but it is of less diagnostic value. The agglutinative power can pass through the placenta or may pass through the mother's milk. In one case it was transmitted through the milk as long as fifteen years after the occurrence of typhoid fever. The power of the child's blood to reproduce the agglutinative reaction after it has been obtained through the milk is not very persistent, however. It may not last for more than a week. In nursing children then the presence of the Widal reaction has no definite significance as regards the presence of typhoid fever, unless other symptoms are present that clearly point to the existence of the disease in the infant.

Infantile Typhoid Rare.—Dr. W. P. Northrup said that infantile typhoid is not as rare as it is said to be by some people and that the Widal reaction is of importance in deciding as to the presence of the disease. In a case recently under Dr. Northrup's care, nine months old, the patient's father and two brothers were sick with typhoid fever. The mother did not nurse the infant, but the child was allowed to play on its father's bed, where it evidently absorbed from its fingers a large amount of infectious typhoid material. The child's passages became frequent and greenish in color and it suffered for several days from continuous fever. On the sixth day characteristic rose spots developed. The temperature continued at 103° F. for nine days and did not become normal until the twelfth day. When the temperature began to run a normal course, the passages became less frequent and the spleen diminished in size. The blood was carefully examined for plasmodium malariae, but none were found. The Widal test was tried during the first ten days, with negative results until the twelfth day, when a positive result was obtained. Four days later it was found once more to be positive.

Incidence of Infantile Typhoid.—Dr. Northrup said that very varying opinions are held in different parts of the country as to the occurrence of typhoid fever in infants. While infantile typhoid is very rare in New York, it occurs not infrequently in Chicago. It is evident that only when an epidemic is especially virulent, does the infected material acquire sufficient strength to affect the usually immune infant. Infantile typhoid does occur,

however, in New York. It is probable that large amounts of infectious material and multiple exposure are required. It must not be forgotten that malaria may occur with typhoid and that if the plasmodium malariae is found in the blood, this does not necessarily exclude the presence of typhoid.

Infantile Typhoid in New York.—Dr. David Bovaird said that in New York City infantile typhoid is not as frequent as it is elsewhere. Among the manifold intestinal ills of children, especially during the warm weather, typhoid may be easily passed over. Thinking that this might be one of the causes for the fewness of the reported cases, Dr. Bovaird carefully examined all the children admitted last summer to the seaside home of St. John's Guild. Repeated Widal tests were made, wherever there was the slightest suspicion of the existence of typhoid fever. Although hundreds of children were examined from many different parts of the city, not a single case of typhoid fever was discovered.

Delayed Widal Reaction.—Dr. James J. Walsh said that the delay in the occurrence of the Widal reaction in certain cases is probably significant of failure of the organism to immunify itself against the typhoid virus. It would seem that the problem involving the reasons for the delay in the occurrence of the Widal reaction is simpler in children and may be better studied in them than in adults, because of the possibility of properly regulating their diet in various incidents of their illness and convalescence.

Abnormal Typhoid.—Dr. Libmann said that in seventy cases at Mt. Sinai Hospital routine Widal tests showed the presence of typhoid fever in cases in which typhoid fever was not even thought of, because of the clinical history. In one case a typical pneumonia existed. In others meningitic symptoms were present. One child came to the hospital in coma and was suspected of having tuberculous meningitis, but the Widal reaction showed that the typhoid bacillus was at work. The custom at Mt. Sinai is to use a dilution of one in twenty and wait fifteen minutes for clotting to take place. The typhoid bacillus culture that is used should be grown at a temperature of 30° C., rather than at 37° C. Those grown at a higher temperature are more susceptible of agglutination and are more prone to give false reactions.

Dr. Northrup said that, with the one exception which he has reported, he has never in twenty-five years of hospital or private practice seen a sure case of typhoid in an infant. During these twenty-five years 1,200 children have been constantly farmed out from the Foundling Asylum. They have been brought back suffering from all sorts of diseases, but never with typhoid. At times there have been suspicions of typhoid, but the diseases have turned out to be catarrhal enteritis of some

simple type, or some of the anomalous forms of grip, or central pneumonia.

Leucocytosis in Typhoid.—Dr. Morse in closing the discussion said that diphtheria and typhoid fever may prove fatal from an overwhelming dose of the toxins of the disease. Fulminant infection is an index of special virulence and of the intensification of infective material by passage through susceptible individuals. Wherever there exists a leucocytosis one must be very wary in making the diagnosis of typhoid fever. Careful watch of the leucocyte count enables the doctor to anticipate complications of various kinds and gives a good idea of the prognosis. However infantile typhoid may be in other cities, there is no doubt that it is extremely infrequent in Boston. Out of 700 cases of disease in the Infants' Hospital during the last year only one has been suspected of being typhoid. During the progress of this case the Widal test was frequently made, but it proved negative. Dr. Morse said that the question of the Widal reaction being one of immunity or of infection, had not yet been settled. Whether a delay in the agglutinative reaction meant that the system was not properly immunifying itself against relapse of the disease was not known. Definite statistics on this subject were lacking. There was no doubt, however, that the Widal test would prove useful in diagnosis not only for the recognition of typhoid, but also for the anticipation of certain complications of the disease.

NEW YORK ACADEMY OF MEDICINE—SECTION ON ORTHOPEDIC SURGERY.

Stated Meeting, Held February 15, 1901.

George R. Elliott, M.D., Chairman.

The subject of the evening's discussion was a symposium on Clubfoot.

Etiology of Congenital Talipes Equino-Varus.—Dr. H. W. Berg read this paper. He devoted a part of his paper to calling attention to views elaborated and published by him in 1881. He said it was a fact that talipes equino-varus was a morphological stage in the normal development of the lower extremity of every human fetus. In early fetal life the leg as a whole rotated outward and this outward rotation was accompanied by an exaggerated varus and later an equino-varus. This outward rotation reached its maximum as soon as the joints were formed. The thighs were flexed upon the body and the legs partially flexed upon the thighs. The wide border of the thigh and the tibial border of the leg pressed against the abdomen of the fetus, the legs crossing each other. All intra-uterine pressure was thus brought to bear directly upon the outer border of the thigh and leg. As a result the foot was rotated in and extended (equino-varus). This, then, was a stage in the normal development of

every healthy fetus, and were the extremities to remain in this position all children would be born clubfooted. Nature provided against this by an inward rotation of the extremity carrying the leg away from its position against the abdomen of the fetus. The soles of the feet came to lie against the uterine walls and intra-uterine pressure was exerted directly upon them producing extreme flexion and outward rotation of the foot—thus was antagonized the varus or equino-varus which had hitherto existed. This inward rotation began about the second month, was to a great extent accomplished by the fourth month, but not complete till the fifth or beginning of the sixth month. Now, if this *inward rotation*, this second rotation stage did not occur or was incomplete the child was born more or less clubfooted. The different stages of rotation were illustrated by fetal specimens from the museum of the New York Hospital. Dr. Berg denied that his views were those of Eschricht as some had claimed. He said Eschricht, like himself, had said that talipes equino-varus was a stage in the development of the lower extremities of the human fetus, but Eschricht had not explained how it was produced. There was no embryological data at that time (1851).

Mechanism of the Foot.—Dr. J. E. Kelly dealt with the mechanism of the foot and the advantages to be derived from the anatomical study of the factors and treatment of talipes. He called attention to the erroneous idea which persisted as to the existence of a transverse arch in the foot. He said it was impossible, as it had no internal abutment; it bore a greater resemblance to a "flying buttress" the upper and inner extremity of which was supported by the so-called longitudinal arch. In reality it was a semi-dome which with its fellow foot constituted a dome upon the apex of which the weight of the body rested. He called attention to the benefits obtained by utilizing the stability of the margins of the semi-domes in walking especially in those tending to pes planum and talipes-valgus. He dwelt on the fact that the factors in the third and fourth degrees of talipes equinus, varus and equino-varus had best be divided into hyper extension, adduction, torsion and longitudinal folding with the exception of the last, which results from the simple approximation of the internal and external margins of the foot. Each of these factors is complex and may occur in two or more anatomical sites and in different degrees, thus accounting for the infinite variety of talipes. He reviewed the different factors in detail—action of the muscles and resistance of ligaments and observed as a summary that the factors in hyperextension, or vertical deformity, are the retraction of the heel, luxation downward and forward of the astragalus and the plantar flexion at Chopart's articulation. Adduction is due to the curvature in the neck of the astragalus, dis-

placement of the scaphoid and the traction exercised by the severed tendons and muscles on the inner aspect of the foot. The torsion is caused by the rotation of the scaphoid on its anteroposterior axis, the traction of the tibialis anticus on the inner margin.

Mode of Section.—The author pointed out that the peculiar facilities of section, resection and dissection were afforded in the two margins of the foot and indicated the positions from which the different structures could be most easily reached. He said that, owing to the direction of fibers of the plantar fascia, it was best to divide it posteriorly near the tubercle of the os calcis, where the flexor dig. brevis, the flexor accessorius and the long plantar ligament might be divided. The division should be obliquely forward and outward parallel to the ext. plantar vessels and nerves. Should the external septum need special section, it could best be approached from the external margin. He advocated the division of tendons close to their insertion. Owing to the slight importance of toes in ordinary locomotion, he suggested dividing the numerous digital tendons close to the metatarso-phalangeal articulation. Owing to his observation on the perfect restoration of ligaments of great mechanical importance, he thought it expedient in subluxation of the astragalus to consider as an alternative to resection, the free division of the lateral and posterior ligaments and the replacement of the bones which should under the persistent influence of the modeling pressure and adaptive shortening result in a restoration of the articular functions.

Nerve Affections.—Dr. E. D. Fisher in speaking of the neurological aspect of talipes said, that the only class of talipes interesting to the neurologist was that class originating from lesions of the brain, spinal cord or peripheral nervous system. The two main clauses of talipes of this class were diseases of the motor tracts of the brain and spinal cord. Another form of talipes was that due to infantile spinal paralysis. Certain definite symptoms differentiate true congenital clubfoot from that of cerebral or spinal origin. In the deformity resulting from central nerve disease were found reflex disturbances usually exaggerated reflexes associated with spastic conditions of the muscles, and commonly the Babinski symptom—the extension of the toes on irritation. This latter phenomenon associated with exaggeration of the patellar and knee jerk always pointed to disease of the pyramidal tracts and is present whenever there is disease of the lateral tracts, in cerebral hemiplegia in the later stages; in the secondary changes following myelitis; in lateral and multiple sclerosis. In congenital clubfoot on the contrary there was no central nerve disease, therefore no disturbances of the ordinary physiological actions of the spinal cord and brain, hence no disturbances of the reflexes. In making a

differential diagnosis between the congenital type of clubfoot and clubfoot due to infantile spinal paralysis, he said the muscular, electrical reactions determined the diagnosis.

Tendon Transplanting.—Referring to treatment, he said of late years interesting experimental work had been done. In cases of spastic paraplegia, for a long time neurologists were opposed to operation, but now he recommended section of tendons, and putting patients in a condition to walk. He referred to transplantation of tendons to opposite muscles or muscles of opposed functions, such as transplanting a flexor tendon to an extensor muscle or *vice versa*. He referred to a boy with central hemiplegia who could not extend his hand. The extensor tendon was transplanted with the result of giving the boy a useful hand.

Dr. Fisher said that deformity could easily be prevented in the early stages of infantile spinal paralysis by mechanical appliances. In the other class of cases in which there was a progressive condition possibly affecting the lateral or motor tracts, more difficulty arose, but he thought surgical treatment with possibly transplantation of tendons of opposite groups of muscles a justifiable procedure.

Non-Operative Treatment.—Dr. Newton M. Shaffer spoke of the non-operative treatment of clubfoot. He said he was accustomed to divide his clubfoot patients into three classes: Vertical, anteroposterior and transverse. By careful study of each case and by making each instrument an individual prescription to fit the given case he had achieved results which at first appeared impossible. The necessity for operation was getting further and further away. He said in the first class of cases of ordinary clubfoot without much deformity, good results could be accomplished by manipulation massage, electricity or perhaps some form of walking apparatus. The careful carrying out of non-operative treatment in these cases should result in cure in a year's time. In the second class where the deformity is greater, especially in equino-varus resistance is present which may be osseous, or fibrous. Experience here was necessary to determine whether operative or non-operative measures should be adopted. It was difficult to give any positive rule, however, although he was inclined to agree with the late Dr. Sayre and not operate if the lesion could be traced to a cerebral source. The rule had exceptions. In the third class, the resistant, some form of operative procedure was usually indicated. This class fell into the hands of the general surgeon.

Referring to cutting the tendo Achillis he said he did not cut when, in taking hold of the foot, he felt the resistance gradually give way.

While he admired Dr. Berg's theory as to the etiology of talipes, he failed to see in conditions found in a child three or four years old, if there was no pathological condition, why

there was delayed growth of muscle. There must be some degeneration or change in the nerve power to account for the delayed growth. He said there was no wide gulf between those who operated and those who did not, but he urged more study of the mechanical principles of treatment and the looking upon apparatus in the light of prescriptions.

Age as a Factor.—Dr. A. M. Phelps, in speaking of the operative treatment of club-foot, said that in considering when and why to operate nothing had been said regarding age of patient. If a rigid foot occurred in a child two months of age and that same rigid foot in a child of six years there was a vast difference. In the two-months-old baby the condition could be cured by the mechanical, non-operative treatment; in the older child such a thing was impossible. For that reason he believed all cases should be divided into classes according to age and deformity. In a certain type of talipes in new-born children the human hand was the best instrument and the deformity could be cured by manipulation before the child was nine years old. In other cases, even after four months there was great resistance and operation was required the same as at the age of six years. Operations on the soft parts are all that were indicated up to a certain age and to a certain degree. In a child of four months a subcutaneous tenotomy was all that would be required in the majority of cases, but having once commenced to operate the foot must be straightened at the expense of a more extensive operation. At the age of two or three years instead of applying apparatus for a year or so he advised subcutaneous tenotomy observing the rule to get the foot straight.

Regarding open operation he said frequently surgeons neglected to carry out the necessary after-treatment. He objected to the operations when bone was removed, such as removing the astragalus which caused shortening of the leg; or the removal of a V-shaped portion from the tarsus which shortened the foot. He said he resorted to subcutaneous tenotomy and if this was not sufficient to allow of straightening the foot, he made an open wound and cut whatever resisted. Occasionally he found it necessary to take a "V" out of the os calcis; occasionally the deformity was so great that nothing short of amputation was indicated. He advocated thorough operative measures rather than spending years with mechanical appliances and subcutaneous tenotomies.

Dr. Phelps then presented Dr. Hunthy upon whom he had operated ten years ago. Dr. Hunthy stated that treatment for double talipes equino-varus was begun at the age of sixteen years. He had the tendo Achillis, plantar fascia and tibialis posticus tendon divided four times; had worn various forms of apparatus until he was forty years of age, suffering more or less pain from the treatment. Dr. Phelps

operated by the open method. He now could walk well and without fatigue.

Dr. George R. Elliott asked what subjective symptoms Dr. Hunthy had had since the operation. Dr. Hunthy replied none except delayed sensibility which lasted two years. Dr. Elliott asked how Dr. Phelps classified the foot at time of operation. Dr. Phelps said it was a case of talipes equino-varus of the third degree. The foot turned almost backward. Dr. Elliott asked if any noticeable change had occurred in the atrophied muscles since the operation. Dr. Phelps replied he did not think there had been any change since the operation.

Operative Risks.—Dr. A. R. Judson said that there was a risk in operating of impairing the innervation of a part below the incision. He had seen cases which showed an improvement in shape with an increase of disability. It was better to pay more attention to the treatment of congenital clubfoot in the new-born than to wait until the lapse of time had changed it to inveterate resistant relapsed neglected or ill-treated clubfoot. Taken in this way, it was among the easier orthopedic problems. The formative condition, the rapidity of growth and the freedom of the foot from the weight of the body made it almost impossible to avoid a good result if due attention were given. Before the child tried to stand, the deformity might easily, and should be thoroughly, overcorrected by the application of a lever, however constructed, a point of pressure being applied alternately against the varus and the equinus with two points of counterpressure above and below. And when the child began to stand a walking brace was necessary which was still a lever, but so applied that the foot was to be held on the valgus side of the plane dividing varus and valgus so that the patient could stamp his foot straight at every step. Braces should be made of tractable metal to be gradually made straight and later more and more valgus, the foot keeping pace with this movement. The varus could thus be completely and permanently reduced and the equinus could be so far overcome as to be practically entirely absent. The necessity of operating in congenital clubfoot was a confession of failure at some time in the history of the case.

BOOKS RECEIVED.

The MEDICAL NEWS acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the MEDICAL NEWS will shortly appear.

AFFECTIONS CHIRURGICALES DU TRONC, MAMELLES, ORGANES GENITAUX DE LA FEMME. By Dr. POLAILLON. 8vo, 748 pages. Illustrated. Octave Doin, Paris.

THE TECHNIQUE OF SURGICAL GYNECOLOGY. By Dr. A. H. GOELET. 8vo, 340 pages. Illustrated. International Journal of Surgery Co., New York.